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ARTICLE I.—*Some Observations on the Subject of the Mode of Connection between the Mother and Fœtus in Utero. By* JOHN REDMAN COXE, M.D., *Professor of Materia Medica and Pharmacy in the University of Pennsylvania.*

IN the 12th number of the North American Medical and Surgical Journal, I published the statement of a case, from M. MERY, which I thought had a strong and decisive bearing on the determination of a question, long and pertinaciously disputed, whether a *direct* communication exists between the vessels of the mother and fœtus during the period of utero-gestation.

The subject is of interest as a point of physiological inquiry; but possesses nothing of practical importance (whether the one or the other side of the question is sustained) to the accoucheur or general practitioner. It is obviously therefore a question of mere curiosity, on which we may be permitted to differ, without its involving in any degree the character and qualifications of the physician; and of consequence, I conceive it to be of that nature, that *either* opinion may be safely taught in a course of lectures without the remotest hazard

of the student being injured by adopting that opinion which he deems most forcibly sustained.

I should not have considered it a subject of further pursuit, had it not lately been rendered of much more importance than it deserves, by becoming the foundation of a trial in our courts of justice; in which, as I understand, testimony of the most opposite description has tended fully to substantiate it as of little actual import, and yet one on which the reputation of a medical teacher was presumed to be dependent.

Without entering into the merits of this case, I have, since that trial, deemed it of sufficient importance to endeavour, on my own account, (as maintaining the same opinion that was regarded as objectionable in the party concerned), to substantiate the position I had previously sustained in the publication alluded to;—viz. that there is a *direct* communication between the parent and child; and proved, as I think, conclusively, by the *direct* and successful experiments of several most ingenuous and most reputable anatomists; whilst the opposite opinion is sustained by *negative* experiments alone, in the hands of others.

As this is a question not to be decided by mere opinion, but by anatomical research, precisely and carefully reported; I shall pass by all the *speculations* of writers, from HIPPOCRATES to the present day, as altogether inadequate to its decision; although a very considerable number might be adduced, as favourable to the position I venture to maintain. Anterior to the discovery of the real character of the circulation of the blood by HARVEY, no one will, I presume, consider that the slightest stress can be laid on the sentiments upheld, on either side, unsupported as they are by the test of experiment. Nay, even since the time of HARVEY, probably not more than about a dozen physicians have practically and experimentally pursued the inquiry. The far greater number of those who have adverted to it, either copy in toto the opinions of others; or pretend to establish the one or the other side of the question by reasoning, derived rather from what they conceive *ought to be* the fact, than from any perfect and fairly performed experiment of their own. All these may, I think, for the most part, therefore, be set aside, whether they be advocates of the one or the other opinion. Including myself in the number, I propose briefly to attend to the few who have practically endeavoured to settle the question at issue between them.

The various opinions of the mode by which the fœtus is nourished are, I apprehend, fully developed in the following quotation from LAFAYE's "Principes de Chirurgie."—Paris, 1749, 12mo, p. 75. At least it is sufficient for our present purpose.

"Pendant tout le tems que le fœtus reste dans la matrice, il reçoit la nourriture par le placenta, et en partie par la bouche.

"Quelques-uns comparent la membrane qui recouvre la convexité du placenta à la membrane interne des intestins.

"Elle est, à ce qu'ils disent, parsemée d'une infinité de petits orifices des vaisseaux ombilicaux, qui pompent, comme font les veines lactées, le suc nourricier ou laiteux, que les vaisseaux de la matrice déposent dans des petites cellules. C'est-la toute la communication qu'ils admettent entre la mere et l'enfant. Car ils ajoutent que le sang porté à l'enfant par la veine ombilicale est rapporté au placenta par les artéres ombilicales, avec la matiére laiteuse. Ainsi le placenta fait les fonctions du poûmon.

"D'autres démontrent que le sang circule de la mere à l'enfant, et de l'enfant á la mere, et que c'est par ce moyen que le fœtus reçoit sa nourriture. Les accidens qui arrivent quelquefois à la mere, pendant sa grossesse, comme les pertes de sang, prouvent cette opinion.

"Les artéres de la mere déposent dans les petites cellules du placenta, le sang qui s'est perfectionné, et qui est devenu plus fin dans la matrice. Les ramifications de la veine ombilicale qui répondent à ces cellules, prennent ce sang, et le portent au fœtus. Le superflu du sang repasse de l'enfant à la mere, par les artéres ombilicales, dont les ramifications le déposent dans les pores de la matrice, ou les veines utérines le reprennent pour le mêler avec le sang de la mere."

Now, it may be essential to remark that mere anatomical investigation unaided by injection, cannot be adequate to decide this question; it is equally clear that even injections cannot decide it, if made from the maternal or fœtal vessels in a *separate* state. To effect it fairly, the injection must absolutely be accomplished whilst the placenta is in *perfect* and *complete* connection with the uterus; a circumstance rarely falling within the range of inquiry; and therefore reducing in a corresponding ratio our chance of investigation. So rarely indeed is this state of things to be met with, that there are scarcely a dozen instances on record (of the human subject) in which the experiment has been pursued.

Even here, too, we perceive, in the minuteness of the vessels, a source of failure. If, with difficulty, a limb injected from an arterial trunk shall have its corresponding veins (of whose inosculation no doubt exists) filled with the injected matter, but rupture and effusion ensue; can it readily be imagined that less difficulty exists of similar rupture and effusion between the delicate conjunctions of the maternal and fœtal vessels? and thus, that a very trifling force exerted, or an undue amount of injection thrown in, beyond what is absolutely necessary, should separate the placenta from its maternal attachment. Whoever duly considers this, will easily acknowledge that very great difficulty does indeed environ the happy execution of any attempt in this particular inquiry. Nor will they be surprised that it more frequently fails of producing a successful than an unsuccessful issue.

With these remarks in view, we are now prepared to pursue the investigation.

The immortal HARVEY, for such he truly deserves to be called, known as he is to every tyro in medicine as the discoverer of the circulation, and familiar on the lips of every medical man; is, I may nevertheless venture to affirm, unknown to far the larger portion, except by tradition. How few have actually looked into his writings on this important point of physiology, the foundation indeed of all our medical opinions, I leave to the judgment of the reader. In this country a reprint of his works has never appeared—nor in Europe, for a vast interval of time. I do conceive that his interesting inquiries are amply deserving of a fuller acquaintance; and I think the medical republic is indebted to the gentleman who (too concisely) has afforded an outline of his merit, by his exposition of a few remarks and extracts from his writings, in the 12th number of your Journal. That the whole of his essay on the circulation is deserving of publication is my decided opinion; for, as that gentleman says, "After all, we owe to HARVEY whatever we possess of true anatomy, physiology, or therapeutics; for neither one nor the other of these departments could have ever existed in their present perfected state, but for the happy direction and philosophic employment of his admirable genius and industry*." P. 373.

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* In thus expressing an opinion favourable to the reprint of an author so truly deserving at the hands of every medical man, I fear I shall have but few supporters; and fewer still, if I were to urge (if only as a matter of curiosity) a

This illustrious man was, however, unfriendly to the opinion of a direct communication between the mother and child—maintaining the reverse in several parts of his excellent treatise "De Generatione." I can only remark, that, not founded on any direct experiment, it is a mere hypothesis with him; and, however greatly I revere his merits, or appreciate his actual researches, I do not feel myself bound to pay any deference to mere opinion, even when emanating from one who is so truly deserving of the utmost respect and esteem.

I shall now proceed to arrange the experiments which I find on the subject, and leave it to every one to determine for himself, how far he would estimate a negative experiment in the hands of others as fully adequate to overturn those of a positive character in his own hands, even although that negative might emanate, as it does, from the celebrated Monro!

It is curious that all this disputation turns on the mere fact of *immediate* vascular communication; for (except by those who may still admit nutrition of the fœtus to be by the mouth, or absorption

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reimpression of many others of our old medical authorities, whose works are quoted, if not known, as a ready passport to present celebrity; but whose works, if actually spread amongst us, would probably show how largely the opinions of the present day are absolutely derived from their obsolete pages! It is, therefore, unlikely that any attempt of the nature alluded to would prove successful; especially when I add, that, but a few months ago, a very enlightened and estimable physician expressed to me his wish that every book of more than five years standing was burned!! I thought I was in a dream; or, at any rate, that I was in the dark ages of the decline of learning! Heavens! what a conflagration did this Gothic wish bring forward to my view! The mere idea is, *now*, more sacrilegious than the *actual* conflagration of the Alexandrine library! It is indeed most true that even by such a funeral pile, we might in some measure be the gainers; for hundreds of volumes would thereby become extinct which have an undeserved location in our libraries! But what productions within the last five years can be put in competition with the works of Boerhaave, Haller, and a host of worthies, who gave the impulse that now illumes the medical world! Even *their* destruction could not now arrest the rapid march of intellect which *they* awakened—or prevent our reaching anew the pinnacle on which, by *their* assistance, we now stand, although it might destroy the sources, and thereby prevent the discovery of what we owe to them. I have no doubt that many would willingly consign their *reputed* labours to such a conflagration; for they who see no chance of their lucubrations surviving them can have no pleasure in the present, or prospective view! especially if they compare their borrowed merits with those so fairly and justly awarded to the great men I have mentioned! Oblivion alone is all they can anticipate!

of the amniotic fluid, if any such there be) all admit the nourishment to pass by the umbilical vein! Here, however, some suppose it to be blood by *direct* intercommunion of fœtal and maternal vessels; whilst others contend that it is blood, or chylous matter, discharged into certain affirmed cryptæ, or other contrivance, from the uterine arteries; from whence it, or a part, is taken up by absorption by the placental veins. It would appear, then, of little actual consequence how this dispute should terminate; since a communication is admitted, although the *quo modo* is not positively agreed on. And as the affirmed facts may be viewed, so the one or the other opinion will of course be maintained. We may, however, again remark, that *either* opinion may be safely held, without the slightest imputation on the character or standing of any physiologist, or implicating in any degree the practical skill or integrity of the medical accoucheur. Truth is nevertheless desirable, even in points of no practical importance: in so far, then, it is equally desirable that the few facts connected with the question at issue should be fairly stated, in order to prevent an ex parte opinion.

At what period the ovum, descending into the uterus, becomes attached by the placenta thereto, may be difficult exactly to assign; and probably it varies in different animals, and in the same animal at different times.

Harvey, whose experiments are very numerous, says, (De Generatione, p. 236, Amsterdam edition of 1662, 12mo.) "Toto hoc temporis spatio (trimestri scilicet) vix quicquam placentæ, conspicitur."—"Nullum enim indicium reperiri licuit, quo conceptum illum, sive ovum, utero adhuc connexum fuisse, crederem."—*Id.* "Porro, conceptus isti mihi videbantur, quasi ova quædam, quæ intra uterum solum foverentur, propriaque indole augerentur."—*Id.* At page 296 he also says, "Nosque etiam mulieribus sæpe secundo mense decidisse vidimus, ad ovi columbini molem, sine fœtu; aliquando etiam ad phasiani vel gallinacei ovi magnitudinem: atque hoc tempore, *embryo intus longitudine unguis digiti minimi fluitans cernitur.* Membrana vero conceptum obtigens, *placentam annexam nondum obtinet, neque utero affigitur;*" and again, at page 376, he says, "Quare haud verum est, spiritus à matre per arterias ad fœtum pertingere: nec magis verum, vasa fœtus umbilicalia cum uteri vasis per anastomosin conjungi. Fœtus enim vita propria fruitur, habetque arterias pulsantes, et sanguine ac spiritibus plenas, diu antequam

conceptus (in quo efformatur et natat) utero alligatur: non aliter omnino, quam pullo in ovo contingit."

It is very certain that HARVEY's experiments and observations go far to prove that the fœtal conception does actually possess a vita propria, and fabricates its own blood before it is actually connected to the uterus by a placenta; and this seems reasonable when we consider that it has been removed from a part far distant, and has passed down the fallopian tube to find a domicile in the uterine cavity*. Now whilst all this is progressing, it is obvious that no connection can exist. It is as yet an absolutely independent being—an organized point of nearly fluid materials. The first symptom of vitality which it affords is the appearance of the punctum saliens, the red blood, formed by some mysterious process within its almost imperceptible and colourless domain, evincing the absolute importance of that fluid to its nutrition, and which is probably the result of a process within itself, from a portion of nutriment derived from the amniotic fluid, by absorption of the tender vasculi, not yet associated by means of a placenta with the uterine walls. But, although at this early period such intercommunication of fœtal and maternal vessels cannot exist, (although nutrition must still be obviously progressing), it certainly does not follow, that such should not be the result at a later period when an absolute connection has taken place. How, indeed, can this adhesion be presumed to form but by the agency of vascular intercommunion? There is at no period any other vital connection but that of vessels; and although it may be difficult to conceive of such direct inosculation, it certainly is not more so, than if we imagine some curious connecting link to ensue by simple apposition, without any direct union of vessels, and that the orifices of the maternal and fœtal vessels should so happily open, pari passu, within the cryptæ thus assigned to them. How are these cryptæ exactly and accurately formed for this purpose precisely at the right moment, with less difficulty than is involved in the idea of a direct inosculation of the mouths of the vessels? These things duly considered, we cannot perceive (mysterious as is this early process of the most mysterious process of the animal economy) that HARVEY's opinion can avail to overthrow the facts I have yet to mention. Nor do we find, as I before remarked, a single experi-

* See JOHN HUNTER on this subject in his Observations on the Animal Economy.

ment made by him of an injection of the vessels of either part. It is to be regarded, therefore, simply as the opinion of this great man, and to be estimated only at what it is worth.

To proceed now; we remark, that several persons in the early part of the last century, no longer content with simple assertion on either side, brought the question to an issue, by employing the aid of injection. Cowper, Nortwyk, Vieussens, and still later Haller, Le Cat (in three instances), and within a few months past, Biancini, all affirm that this communication is proved by aid of injections under their own particular pursuit, directed to the determination of a question so long dividing the medical world.

The only persons who *experimentally* endeavour to destroy the force and weight of the experiments made by the above gentlemen, are Drs Alexander, Sen. and Jun. and Dr Donald Monro; and to them I now direct my attention. John Hunter has given us his particular views, but takes notice of not a single person on either side of this contested question.

In the Medical Essays and Observations of Edinburgh, Vol. II. page 102, 3d edit., 1747, (the 1st edit. published in 1732 or 3), Dr A. Monro has given us an extensive, interesting, and very instructive paper on the subject of the "Nutrition of Fœtuses,"—one which no one can read without pleasure, from the general learning and apparent candor and urbanity which pervades it throughout.

He thinks the determination of the question "concerns the fœtus *after it is formed;* whose nourishment is now allowed by all either to pass from the amnios by the mouth into its chylopoietic organs; or to be conveyed into its bloodvessels by means of the umbilical vessels; or to be furnished by both." He maintains the second of these opinions; and has, consequently, endeavoured to render the other two improbable; which he attempts with great success by the solution of the three following problems*.

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* In Dr Monro's very interesting memoir, under the solution of the above three problems, he has absolutely forestalled every thing that *has since* appeared on the subject. A reference to his paper will show that nearly every thing since said is little else than a mere *transcript*, or at best, a transposition of his arguments and facts, often so clumsily done as readily to demonstrate the plagiarism, however *occasionally* he may *be quoted*. It might be supposed that the authorities thus quoted had been investigated in the original authors; and yet I will venture to affirm, by a comparison of Monro's essay with most of those since his time on the subject, that his essay *alone* is the only work that has been consulted; and that many of his best arguments have been left out of view.

1. How far the mouth or umbilical vessels are necessary to the nourishment of fœtuses?

2. Whether the liquor of the amnios is proper food for a fœtus?

3. Whether this liquor passes into the stomach of a fœtus?

Considering these only in so far as they relate to viviparous animals, he says,

"In treating this subject I must beg leave to throw away that humble regard to authority which bore sovereign sway in the schools of physic so long, and to pass all the hypothetical reasonings to be met with in books unmentioned. It is only well vouched facts, and reasonable consequences from them, that I will take any notice of; for on these, and these only it is, that a rational foundation of any part of medicine can be laid."

In this position I fully acquiesce; for it would indeed be absurd to depend for the solution of a question like this on merely speculative opinions, on either side, unsupported by the aid of anatomical research, in which the greater part of writers were deficient, at least previously to the fifteenth or sixteenth century.

He then enters into the enumeration of various facts under thirty-two different heads, which he considers *as unquestionable;* but which I do not intend to repeat, or even to refer to, with the exception of two or three which more immediately interest us in the present inquiry; although all are in a greater or less degree connected with it, and some of them may not be deemed exactly conformable to present opinion.

His own sentiments may be considered as embraced pretty fully by the following:

"8. The placenta is covered on the side next to the womb with a fine membranous continuation of the chorion." Page 108.

"9. The extremities of the umbilical vessels pierce this membrane, and show their very small orifices on its side next to the uterus; and therefore it is compared to the villous coat of the intestines." Page 108.

"13. The mother supplies liquors to the fœtus, which returns others to the mother by means of the uterine and umbilical vessels.

"This seems (says he) to be plainly proved by observations. Fœtuses whose placentæ were not in the least separated from the uterus have been quite exhausted of blood by the mother's dying of an hæmorrhagy; and I have seen children pale and weak by violent flooding in the time of labour." Page 109.

The doctor does not then deny a communication between the parent and child; but that it is not continuous by inosculation of vessels, but merely contiguous through the intermedia of certain cavities. Thus:

"16. The liquors are not carried from the mother to the fœtus, or from the fœtus to the mother, by continued canals; that is, the uterine arteries and veins do not anastomose with the veins and arteries of the secundines; but the extremities of the umbilical vein *take up the liquors by absorption* in the same way as the lacteal vessels do in the guts; and the umbilical arteries pour their liquors into the large cavities of the sinuses, or other cavities analogous to them." Page 112.

His arguments to prove this assumed fact are, to me at least, inconclusive; although specious at first sight, and spread over upwards of twenty pages; for the most part indeed combating the affirmations of COWPER, NORTWYK, and others, who assert *that they did actually inject the vessels from either side.* He denies the former having ever performed the experiment on the human subject; yet he states from DRAKE, that "Mr COWPER kept by him a cotyledon and part of the uterus of a cow, in which mercury, poured into a branch of the uterine artery, went into one of the cotyledons of the uterus, and filled those branches of the umbilical veins which went from that cotyledon to the navel of the fœtus," which indeed he attempts to rebut at page 127, by experiments of a like nature, in *which he was unsuccessful**.

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* DRAKE, to whom MONRO thus adverts, wrote a very excellent treatise on anatomy, which reached three or four editions by 1727. At page 231 (2d edit.) he enters into the consideration of the objections against nutrition by the umbilical vein, and is, I think, very happy in his reply to them. As it regards the quotation above made, by MONRO, unless the later editions are strictly followed, I must observe that it is not precisely as in mine, (the 2d), from which I therefore transcribe the passage, page 234—"Thus the reasonableness of this old opinion may be vindicated, but the certainty of it rests upon stronger proof. Mr COWPER, to whose happy industry we owe the confirmation of many ancient discoveries, and the benefit of some new ones, has the honour to re-establish this old, but long exploded truth. For by pouring mercury into a branch of the uterine artery of a cow, that went into one of the cotyledones of the uterus, he filled those branches of the umbilical veins, which went from that cotyledon to the navel of the fœtus; which with a part of the uterus he keeps prepared by him." The meaning is the same in both, and I should not have thought it proper to mention it, had not Dr MONRO's quotation been in inverted commas, as if absolutely abstracted verbatim from DRAKE.

How far a positive assertion of a fact is thus to be overthrown by negative experiments in the hands of others, will be of course differently viewed by the advocates and opponents of the position.

At page 118 Dr MONRO takes up the consideration of the assertion of Dr NORTWYK, who experimentally affirms his having actually injected from the uterine arteries, the vessels of the chorion and placenta, and which he affirmed he *was* "*ready to demonstrate at any time in the preparation which he preserves.*"

Acknowledging the candour and learning of Dr NORTWYK, MONRO states that such a positive assertion "had made several considerable men to decide against me, (Dr M.) and to affirm upon his authority, that there is an anastomosis." He endeavours, however, to show that Dr N. was deceived, and for this end he sets down Dr N.'s description of the parts, and compares them with what he had himself observed*.

At first sight I supposed that Dr M. had carefully appended every point connected with the subject in due and ample detail; but, on comparing it with the original, it constitutes but a very minute part of his remarks, and many of them from far distant places—omitting a vast deal of that intermediate portion which forms the connecting link of Dr N.'s chain of facts and reasoning. Dr M. appears to have dissected three women who died in pregnancy at three, six, and eight months, "before either the membranous part of the secundines was torn, to let out the water, or that the placenta was the least separated from the womb." Page 122. Whether he injected any of these is not very apparent; but he mentions doing so in one instance, where the parent was three or four months gone with child. He continued the injection, he tells us, "till all the vessels of the womb, both arteries and veins, were in hazard of bursting;" his injection did not enter any branch of the umbilical arteries, or fœtus. He adverts to Dr NORTWYK's objections to his experiment, and endeavours to set them aside; how substantially, will of course be differently viewed by the advocates on either side of the question.

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* All this is very well, and I have no desire to call in question the slightest observation communicated by Dr M. On the contrary, all his writings prove him to be scrupulously adherent to truth. I only object to him that he has set up his failures against the united testimony of six or eight men, in eminence not his inferiors, and fully competent, as himself, as practical anatomists, to determine a question of fact.

He again refers to the experiments of trials made on brutes, and adverts to his own, in which *he did not succeed*—page 127; and he mentions SLADE* as quoted for "the liquor injected into the arterious vessels of the uterus being carried to the cotyledons, and, by the cavities of the cotyledons, into the substance of the placenta;" which, *he* (Dr M.) *thinks*, "*may signify no more* than effused on their unequal pulpy substance" (128): but can we consider these *thoughts* of his sufficient to overthrow the absolute affirmation of Dr SLADE? although Dr M. tried *ineffectually* to do the same.

An experiment of VIEUSSENS, wherein he asserts "that mercury, without breaking any vessel, or the effusion of one drop of blood, passed through the placenta surrounding each whelp, and *was pushed into the umbilical vessels themselves*," is equally deemed false; as being *strangely contrived*, and principally I suspect, because *it was unsuccessful in his hands*. And he deems his arguments strengthened, because VIEUSSENS writes in a way which seems to show that *he did not believe in an anastomosis*. If he did not, I must confess, I think this experiment of so much the more weight, inasmuch as it is entirely opposed to that belief.

I shall not proceed further in this; but merely suggest that here is the authority of one man (*altogether failing in his object*) set up against the positive affirmations of five or six acknowledged anatomists, who assert their having accomplished that which he thus failed in effecting! It has too much the air of dogmatism; and is conformable to the general conduct of Dr M., who was perpetually at war with HUNTER, MECKEL, and others, in claiming his priority of discoveries, or underrating such as were made by others in which he had failed of success.

That he was not, however, himself, fully satisfied that he had overthrown the authority of COWPER, NORTWYK, and others, on this head, is, I think, proved by this quotation from him (page 134): "Though I think this sufficiently proved, (§ 16) yet, to shorten hereafter the dispute concerning the nourishment of a fœtus, I may remark, that it will be sufficient for my purpose in the present question,

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* Why Dr SLADE is objected to by some writers on this subject as an old and fabulous writer of slender repute, I confess I cannot well conjecture. I have endeavoured to find any proof of such an assertion, but hitherto my attempts have been altogether unavailing. Let us not undervalue authority unless we can fully confirm our animadversions. Let us recollect that we ourselves wish to be regarded as such in all that we may venture to advance as fact.

to have part of the vessels of the secundines granted to be absorbents, though others were found to be continued, or to inosculate with those of the uterus."

He *thinks* (§ 17, page 134) that "the *red particles* of the blood are not *probably absorbed* by the small extremities of the umbilical veins;" and assigns his reasons for such belief, which are probably valid. Now, the very circumstance of red blood being found in the fœtus, if his position is true, would strongly tend to the inference of the continuous communication of vessels. Aware of this, he has attempted to illustrate the existence of this red blood in the fœtus, by the analogy of the chick in ovo. "I answer, (says he) without entering upon any philosophical comparison of the placenta in a fœtus, and of the lungs in respiring animals, that fœtuses of viviparous animals *have their red blood from the same source that chickens in ovo have theirs;* which can be no other than the action of their heart and of the vessels in their body and secundines."

In my opinion nothing more substantially tends to prove the intercommunication of vascularity in the viviparous fœtus, than this circumstance of red blood being found, where *no apparatus is conjoined for the agency of the external air.* In the *oviparous* embryo, cut off from all maternal communication, a different contrivance became requisite; and this is found in the *air vessel* at the large extremity of the egg, with which the incarcerated embryo or its vessels are in immediate and constant contact. In my inaugural essay 1794, I have stated the experiments I then made on this subject, in which, I found, (however that air is therein derived), that it is at the first, nearly, if not entirely pure oxygen gas; becoming deteriorated by carbonic acid as the process of incubation proceeds; and this probably by a process analogous to the respiration of living animals. Nor have I any doubt that every egg, however small, of every animal, requiring a similar process for sanguification, is equally provided with an air receptacle to accomplish the purpose of nature. Although thirty-five years have since elapsed, I know not that any physiologist has taken up an inquiry so interesting as this fact leads to*!

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* The vessels of the umbilicus in the egg appear to have a double intention. Separated as it is from the parent, it is essential that there should be a source of nutrition to the fœtal chick, and also one, capable of co-operating in the functions of sanguification. In the case of viviparous animals, both these are effect-

This scientific and learned physician, is, I find, (page 139), extremely prompt in urging the futility of a negative assertion, (even of HARVEY) when it did not comport with his own views, against the evidence of "later observations." Why then are we to yield assent to his negative experiments, however speciously supported, in opposition to the positive "observations" of men, in no wise his inferiors! It is a hard rule that will not work both ways; and surely he cannot claim for his negatives, more than he is willing to allow for those of others!

I shall conclude my remarks on this gentleman's observations, by stating my opinion, that he has very sufficiently shown, that the fœtus is nourished solely by the umbilical vessels, both before and after its attachment to the uterus of the mother. That previous to such attachment, no inosculation of vessels can exist, is self-evident.

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ed directly by the parental blood. In the oviparous (and I refer principally to the chick, which has been chiefly attended to by physiologists), a portion of the umbilical vessels proceeds to the yolk, which is by that portion taken up and carried to the fœtus, for nutrition. Another portion, ramifying on the membranes, reaches the air vesicle in the larger extremity of the egg, and thereby the blood in its circulation is exposed to the agency of the air, as by the lungs in the living animal. This beautiful contrivance, rendered essential from the total disjunction of the parent and chick, was not unknown to the illustrious ARISTOTLE, a name unrivalled in the annals of philosophical and physiological research. In his most elaborate treatise, "De Generatione Animalium," lib. 3, cap. 2, he says, "Principio corde constituto, et vena majore ab eo distincta, umbilici duo de vena eadem pertendunt: alter ad membranam, quæ luteum continet; alter ad membranam, cui secundarum species est, qua animal obvolutum continetur, quæ circa testæ membranam est. Altero igitur umbilico cibum ex luteo assumit, &c."—"Alter umbilicus ad secundas tendit."—"Membrana vero exteriore novissima sanguinolenta hæc perinde, ut illa utero, utuntur."

His learned commentator, AVERRHOIS, on this part of the chapter, says, "Quod autem sensu apparet de procreatione pulli in ovo, est ut dicam. Primum, quod in ovo generatur, est cor, et vena magna orta ab ea. De qua vena protenduntur duo rami: quorum unus ad membranam proficiscitur similem secundis, quæ pullum circumvolvunt: alter vero ad membranam quæ luteum continet, quo pullus nutrimentum ex luteo accipit, et est sibi veluti umbilicus."

The shell of the egg, whilst protruding from the hen is soft and flexible; hence, the efforts to effect this protrusion give that greater rotundity to the extremity of the egg, which first comes in contact with the external air, and by which it soon hardens; the ultimate efforts, as it finally passes out, give a more pointed form, which is retained by the other extremity of the egg. How this provision of air is accomplished in the large extremity, I do not know; but it is always present.

It is therefore, in that early stage, by absorption alone; in which neither contiguous nor continuous vessels can be implicated. But, although such colourless fluids may be then fully adequate for the fœtal nutrition, it certainly does not follow that at a later period, when a new mode of existence (that of immediate connexion with the mother) is obvious, that the same species of nutrition is still effective. The very circumstance of this connexion becoming essential to the further development of the fœtal growth, seems conclusively to demonstrate that another species of nutrition is thenceforward required; and as the fluid furnished by the mother is blood alone, if that red blood cannot be *absorbed* "any where" (page 134), it necessarily follows that it must be conveyed by continuous vessels.

I shall take notice of NORTWYK's experiments very concisely—merely, indeed, to show what he thinks he saw, and affirms he had accomplished; leaving the reader who is desirous of entering more largely into the subject, to refer to the work itself, which will most amply repay him for its perusal, by the vast assemblage of facts he has accumulated on a variety of topics connected with this and other points bearing on the mysterious subject of generation and its results.

The fœtus of which he gives account was at about one-half the period of utero-gestation when the parent died. The injection was carefully made, prior to any dissection of the uterine contents, after it had been cautiously removed from the abdomen, with an injection which, he says, had never failed him, even in filling the minutest vessels of the cortical part of the brain (minima corticis cerebri vascula); "illaque implevi uterum nihil etiamnum violenti passum, et fœtu onustum suo."—About five ounces passed in, and he hesitated whether or not to augment it. Finally, he thought it best to abstain, as judging a sufficient amount was used to detect any communication of vessels; and that better, than if too greatly loadened, which might render the parts more obscure and confused, and might even be likely to separate the placenta from the uterus, by which the matter effused between them, would tend to destroy all his labour and pains.—Pp. 6, 7.

After describing the cautious dissection of the uterus, &c. he saw the "chorion per veram cellulosam substantiam uteri cavo adcretum esse," &c. "Eandem hanc cellulosam separanti *vasa occurrebant*

numerosa per totum ambitum, ex chorio in uterum porrecta, impleta." —Page 9.

"*Vasa insuper numerosiora* videbantur, quibus extra placentam emergentibus, atque in uterinos poros insertis, *manifesta oculis communicatio patebat inter uteri et placentæ vasa*," &c.—Page 10.

"Dubitari demum non posse de immediata communicatione vasorum uterinorum cum ovi vasis, quoniam materies, per ramum arteriæ iliacæ matrici immissa, in *vasa placentæ et chorii profunde penetraverat.*"—Page 11.

These quotations may suffice to substantiate the truth of Dr N.'s position, in opposition to the negative experiments and sophistic ingenuity of Dr Monro. Nor is it useless to remind the reader that Dr N. was previously an opponent to this opinion, which the evidence of his own eyes now compelled him to adopt. At page 101, offering, in opposition to the casuistry of Monro, to *show the very preparation itself*, still in his possession, he says, "Pœnitet, quod coactus fuerim, aperte obloqui viro de re anatomica meritissimo: at non licebat prætermittere experimentum, prima fronte nostro directe oppositum, totque præclaris ratiociniis stabilitum, ut sine adulatione (quam plane odi) candide fateri queam, *non hæsitaturum me fuisse versus ejusdem sententiam inclinare, nisi oculi* docuissent, totum hoc, in cæteris tam pretiosum, ædificium corruere ob singulare vasorum circa has partes systema supra dictum, quod cum doctissimus vir ignoraverit, mirum non est, si aliter sentire impulsus sit, causis gravissimis."—And he retorts with great severity on his learned antagonist, that "Lubricam errori viam stravit, simul et ansam præripuit observandis illis, qui placentæ uterique commercio famulantur, canalibus, materies nequaquam adcommodata operi," &c.

We come to perceive at last, that this curious inquiry is not settled by Monro, in opposition to the sentiments upheld of a direct communication. However specious the *arguments* employed, they are *still met* by the direct fact of experimental research; and if gentlemen think proper to deny facts, for the purpose of maintaining a favourite hypothesis, we may as well divest ourselves of all practical and experimental knowledge, and be satisfied by roaming in the fanciful creeds of our own creation!

I shall now mention a dissection made by Dr Donald Monro, with the view of confirming his father's opinions, as just detailed. In the same work is also a communication of a similar tendency, by

his brother, Dr ALEXANDER MONRO, Jun.; which however, I do not think necessary particularly to refer to, as the objections are of the same character I have already employed.

Physical and Literary Essays and Observations, Ed. 1754. Vol. I. p. 403. Dissection of a woman with child, &c. by Dr DONALD MONRO.

This gentleman was the son of ALEXANDER MONRO, the first teacher of anatomy in the University of Edinburgh, and brother of the late ALEXANDER MONRO, professor of anatomy there.

The dissection, &c. as stated by Dr M. appears unexceptionable, and might unquestionably be supposed to decide the question unequivocally—especially as being so confirmatory of his father's sentiments as given in the Edinburgh Medical Essays and Observations, Vol. II. (1747, 3d edit.) and apparently read in 1732, and which I have already adverted to. The paper occupies upwards of twenty-three pages, and would therefore be incompatible with the limits of this Journal. It is nevertheless of great interest, and well deserving the particular attention of any person who feels interested in the present discussion. I shall barely notice a few particulars.

The subject was six months in her pregnancy; and Dr D. MONRO was requested by his father, to whose anatomical theatre it was brought, to examine it with a particular view to this question of the assumed anastomosis of the vessels of the womb and secundines; "as NORTWYK (Hist. Uteri. Hum. p. 1, § 7, and p. 2, § 83) affirms there are, and HALLER, in his Primæ Lineæ, (§ 830) seems to allege; though in private conversation with this last named gentleman, when I was his scholar at Gottingen, he told me that what he had wrote concerning that subject was upon the authority of others, and not from his own observation; for that he had had three women with child for subjects whose bodies he had injected and dissected, but had found nothing like an anastomosis between the uterine and secundary vessels in any of them: so *that he now* believed there was no such anastomosis as was alleged." P. 404.

This is an important statement, and tends greatly to destroy our confidence in HALLER's assertions and writings, if the fact be correctly given. It is not mentioned in what year this conversation passed, and hence it will be difficult to compare dates between the the parties. I shall here only remark that HALLER in his Elem. Physiol. Vol. VIII. (edit. of 1766, Berne, nearly twelve years after the paper of MONRO), page 240, refers expressly to MONRO's paper,

and to the part at which he confidently expresses (page 419) his own opinion that there is no anastomosis. Why he should not in this place, and with the paper under notice before him, state this as being likewise his own opinion, if so was the fact, I cannot perceive; and especially, as afterwards (p. 248, § 34) he says, "contraria quidem sunt nonnullorum, quæ (argumenta) ex adversariis repetimus. Nempe per matris vulnera negarunt aliqui cl. viri fœtum exsanguem reddi, nos adfirmamus. Ut in omni autem experimento, major est vis adfirmantis periculi, quam negantis, cum obstacula varia effectum naturalem possint morari, causæ alicuæ eum eventum producere nequeant, quid sola partium fabrica sequi potest."

This he follows up with numerous references of affirmed cases of the fœtus becoming exsanguinated by the loss of blood from the mother; and he expressly notices the case of M. Mery, which I formerly stated; and finally concludes the section by the following remark: "*Hæc omnia ostendunt*, sanguinem fœtus de placenta effluere, neque cæcam adeo esse hujus superficiem: deinde vim, qua sanguis per vasa placentæ movetur, non esse exiguam: et *demum sanguinem fœtus in matrem redire et per ejus vulnera effluere.*" This does not look like an abandonment of his previous sentiment!

Page 250, § 35, entitled "Injecti in Matrem Liquores in Fœtum transeunt." He has here collected a variety of proofs of such being the case from Cowper, Vieussens, Nortwyk, &c. adding—"Hæc experimenta eo plus habent virium, quod per mille causas, liquor in tenuissima vasa inmissus, vim suam amittere, stagnare, neque per eas angustias in fœtum transire possit, *quod quidem et* Alexandro Monro *accidisse potuit et* Roederero; *cum nulla fraus subesse possit experimento, in quo materies matris vasis injecta in vasa umbilicalia fœtus penetravit.* Novimus enim, quam extemplo in massam informem injecta massa ceracea cogatur, quamprimum ex vasa effusa; parietibus desiit coerceri.

"Quare *nisi viæ continuæ* a matre in fœtus vasa ducerent, *nunquam alius eventus* injectionis deberet expectari, *neque posset evitari*, quin extra vasa impulsus liquor effunderetur, si uterus ostiis hiat: aut in venas uteri idem humor rediret, si nulla sunt in ejus interna superficie ostia.

"Iterum *et ego* et cl. Roederer *ceram in cellulosam telam quæ chorion est, impulimus.*" "Proximum videtur, ad conciliandos eventus, vasa inter uterum et fœtum media, in utraque chorio nuda

et placentali pertenea esse, ut rarius integra vim injectæ ceræ sustineant, eamque ad vasa umbilici ducant, plerumque, vero, abrupta in cellulosam telam dimittant, qui meus et ROEDERERI fuit successus."

Here then we perceive no doubt in the mind of this great man of the intercommunication. He further sanctions the opinion from experiments, &c. of ALBINUS and ROHAULT; and I feel therefore persuaded that MONRO must rather have misunderstood him, than that he should, after so many years had elapsed, have firmly adhered to his opinion in opposition to his so affirmed belief.

In relation to the case of MONRO, then, interesting as it undoubtedly is, I cannot but conceive it a failure in his hands, and that the negative proof thence derived is not capable of overturning the positive experiments of other more successful anatomists.

This case of MONRO, however, leads me to observe that, *published*, as I have before mentioned, in the Physical and Literary Essays of Edinburgh in the year 1754, it is not even hinted at by Mr JOHN HUNTER in his essay "on the Structure of the Placenta," printed in his "Observations," &c. in 1786. He there relates a case of injection of the veins and arteries of a pregnant woman by Dr M'KENZIE in 1754, and gives his own statement of the dissection—claiming for himself the discovery of the actual method of maternal and fœtal connection. As Mr H. *is said* rarely to have read on the subjects that employed his pen, it may reasonably be anticipated that he makes no allusion to the various authorities I have enumerated, or to their experiments. That they must have been known, if not familiar to him, I judge however from the very commencement of his essay. "The connection (says he) between the mother and fœtus in the human subject *has in every age* in which science has been cultivated called forth the anatomist, the physiologist, and even the philosopher; but both that connection, and the structure of the parts which form the connection, were unknown until about the year 1754," &c. It is not my intention to take up the consideration of this very interesting paper further than to remark, that it has many ideas in common with the MONROS, and yet differs in others so greatly, as to evince that even these great men, both equally disclaiming a *direct* communication between the mother and child, are not agreed between themselves. Whose views, then, even of that side of the question, are *we* to accredit? When these discrepancies are settled

between those contending against any immediate connection of vessels, it will still be far from prostrating the positive assertions founded on their own experiments, which I have adduced from others.

The opinions particularly opposed to a *direct* communication be-between the parent and fœtus may be regarded as three-fold—those of Monro, J. Hunter, and Dr Blundel. Much as they oppose argumentatively, and by assertion, this opinion, they are however by no means decided amongst themselves.

Monro speaks of cells, into which the uterine vessels, contorted at their extremities, pour forth their contents. In these cells also are said to open the extremities of the placental vessels, which absorb the blood, or a part of it, for the fœtal support. We must presume a similar series of cells for the deposit of the fœtal blood by the umbilical arteries, in order to be absorbed and carried back to the mother by the uterine veins!

Hunter considers the placental apparatus to be like the cells of a sponge—all the cells intercommunicating; the uterine vessels pouring their contents into them, and the placental vessels taking them up and carrying them to the fœtus. As far as I can perceive, little or no explanation is given how the blood is conveyed back from the fœtus by the umbilical arteries, to be carried to the mother by the uterine veins.

Blundel, apparently aware of this difficulty, whilst he assumes the same spongy texture of the placenta, and supposes it to be filled with the fœtal and maternal blood, affirms, that although so nearly approximated, these two kinds of blood are never in actual contact. He says the maternal blood lodges in the cells; whilst the fœtal blood is contained in its vessels: thus both are separated by an exceedingly thin vascular membrane. In order to explain the source of nutrition, he is then under the necessity of supposing a communication to exist between the cells of the fœtal vessels by means of *very minute pores*, impervious to the red blood, but transmitting the more subtle parts; viz. serum and coagulable lymph to the fœtal vessels!—pores, which he admits (I think) have not been demonstrated!

Now, without dwelling on the various speculations arising out of these supposed structures, I shall only ask, wherein, by them, the physiological question is simplified, or rendered more intelligible as to its final object, by the contrivances with which the opponents

of a *direct* communication are thus obliged to invest dame nature in her secret domains, in discordance with those gentlemen who, in their own successful experiments, have followed up a *more simple* process of interconnexion!

Having now concluded what I had to say on the subject matter in dispute; I may once more, I think, affirm, that the verification of either side involves no point of practical importance; and consequently, that either may be accredited and taught without injury to the hearer, or in any way implicating the character and standing of a teacher.

May I be permitted to ask, whether the question has been at all settled by becoming one of public investigation in a court of justice? Has one proselyte been made by all the learned discussions and inquiries of the counsel on either side, or by the contradictory evidence of the witnesses? After all, is it not clear that a communication exists, continuous, or contiguous, from which the same result ensues, viz. the nutrition of the fœtus by means of the maternal blood, through the medium of the umbilical vein? The fact, accomplished as it may be, is, to us, of little importance; its full value is known only to the little stranger, who is hereby progressing to the portals of life.

However interesting, then, as a mere subject of physiological investigation; this, with many other questions relating to the animal economy, may possibly never be decided to the perfect conviction of every one. The subject of secretion is altogether mysterious; as are all the ultimate and minute actions of the invisible circulation; and, whatever opinions we may hold on any of them, we surely are not amenable to the censure of others from whom we may chance conscientiously to differ. The time it is to be hoped is passed in which we are to be fettered by the trammels of authority. If not so, let me ask, who are the undisputed arbiters of speculative physiology? Who of the profession of medicine will now consent to give up his own judgment on speculative points to any individual, unless something more than argument may prevail to change it? What has our profession gained by the degrading prospect exhibited of medical opinions canvassed and cross-examined in a court of justice? If we still have to admit that certain opprobria remain to medicine; at least let us not be obliged to enumerate professional dissensions as amongst the number.

Article II.—*Notices in Pathology and Therapeutics. By* George B. Wood, M.D. *Professor of Chemistry in the Philadelphia College of Pharmacy.*

Read before the College of Physicians, Dec. 30th, 1828.

Facts occasionally present themselves to the observation of the medical practitioner, and ideas result from his reflexion, of a nature too isolated or trivial to be communicated in a connected essay or treatise, which may, nevertheless, have a certain degree of merit; and, if collected together from many sources, may form, in the aggregate, no contemptible addition to the general mass of knowledge. Whether the following notices can properly be considered as coming under this character, others, perhaps, will be better able to decide than their author.

I. Experiments made by M. Flourens, and other French physiologists, seem to authorize the supposition that the power of controlling and directing muscular movements resides in the cerebellum. When this organ is materially injured, individual contractions may still take place under the influence of the will; but the animal is no longer able to associate its motions, so as to walk, or fly, or to perform accurately any other office which requires a concordant operation of many voluntary muscles. The following case may, perhaps, in some measure, illustrate this position.

The patient was a boy between three and four years of age, and before the attack on account of which I attended him, had been healthy, active, and intelligent. The attention of the parents was first attracted to his case by observing that he was unable to walk directly forward, and they immediately applied for medical advice. This was on the morning of the 4th of July last. Upon visiting the patient, I was struck at the first glance, with an appearance of the countenance very unusual at his age. There was a slight contraction of the brow, and a fixedness in the direction of the eye, indicating a strong effort to collect the thoughts, while the vacant expression of the other features implied a want of success in the effort, altogether or closely resembling the effect of intoxication. I have often witnessed a similar expression of face in drunken people, endeavouring to assume a look of intelligence. The child did not speak of his own accord, and in answer to questions simply express-

ed assent or dissent. To his mother and myself he seemed to pay little attention; but when spoken to loudly, and in a tone of authority by his father, he would try to do as directed, protruding his tongue, holding out his hand, and even attempting to walk. When placed upon his feet, he could stand for a short time; but, on attempting to proceed forward, invariably moved towards the left, and soon fell upon the floor in the same direction. In the sitting or standing posture, his head always inclined towards the left shoulder; and this, next to the expression of the countenance, was the most striking symptom in the case. There was no loss of sensation, and the muscles were in some measure under the control of the will; but he was unable to associate their motions with accuracy. The tongue was slightly covered with a whitish fur, and the pulse was more frequent than natural, though not very highly excited. There was no flushing of the face, no strong beating of the carotids, no apparent pain in the head; and the only circumstance which directed my attention to the brain was the peculiarity in the mental operations and muscular movements of the child. He had been the day before taking a long walk in the sun, which might have induced the disease.

Having some time previously read an account of the experiments of M. Flourens, it occurred to me that the symptoms might be explained upon the supposition that the cerebellum was in a disordered state; and without mentioning my view of the case, or hinting at the part I supposed to be affected, I requested the mother to observe very strictly whether the child might not make some complaint, or exhibit some sign, which would enable us to ascertain the existence of pain in some particular spot. In the mean time, as the complaint might possibly depend upon irritation of the bowels, six grains of calomel were prescribed, to be followed by castor oil. In the evening the medicine had operated without producing any favourable change. There was now some heat of skin, and the pulse was rather more excited than in the morning. Directions were left that four ounces of blood should be taken from the arm, and doses of the saline draught with tartarized antimony administered at short intervals.

On the morning of the 5th, the skin was moist, and cooler than in the preceding evening; and there was greater ability to walk, though the steps were still tottering, the inclination to the left side as observable as ever, and the other symptoms unchanged. The saline

draught was continued. Hitherto no indication of uneasiness in the head had been presented; but in the afternoon of this day, his mother took notice that he more than once placed his hand on the back of his head, immediately behind the left ear, at the same time saying oh! as if in pain. This being considered a sufficient evidence of the locality of the diseased action, eighteen leeches were ordered to be applied as near the spot as possible. The draught was continued.

On the 6th, there was rather more command over the muscles, and general self-possession observable; though no decided change had taken place. Castor oil was freely administered, and a large blister applied to the back of the neck; the diaphoretic mixture which was suspended during the operation of the oil being resumed in the evening. The blister drew well, and on the morning of the 7th I was pleased to find the child greatly improved. His eye was now bright and intelligent; he spoke freely and of his own accord; and though weak and somewhat tottering, could stand perfectly upright, and walk without inclining to the left side. On the 8th, he was well.

It is hardly necessary to observe that, throughout the case, the diet was exceedingly simple, consisting only of thin gruel or barley water.

II. The alarming consequences which occasionally follow the recession of certain cutaneous eruptions, after the application of repellent articles, are familiar to every practitioner; but I do not think that erysipelas is generally considered as one of the diseases in which such a recession is to be much apprehended. Local applications of an irritating nature are, I believe, usually avoided from the fear rather of aggravating the inflammation of the skin, than of transferring it to other and more dangerous situations. The subjoined case may tend to show that the latter source of danger is not to be despised.

In the spring of the year 1825, I was called into the country to visit a gentleman about 70 years old, in consultation with a very respectable physician who resided in the neighbourhood. His complaint was erysipelas of the face, which had been preceded by a chill and fever, and was attended with the usual symptoms. A blister over the forehead prevented the inflammation from reaching the scalp; but it extended rapidly downwards, embracing the whole face and anterior part of the neck. There was much swelling of the

cheeks with hardness and severe burning pain. As the constitution of the patient was rather feeble, and his pulse by no means strongly excited, we abstained from the lancet. Some blood was taken from the most inflamed part by leeches; the bowels were freely opened; refrigerant and diaphoretic medicines were administered; calomel was occasionally interposed in very small doses as an alterative; and, with the exception of the leeches beforementioned, and a blister placed across the forehead, and down the temples in order to protect the scalp, rye-meal was the principal local application.

Under this treatment the patient gradually mended. The tongue cleaned, the pulse was reduced to the healthy standard, the intellect became clear, and the inflammation of the face subsided, leaving some ulcerated openings about the eyes, from which pus, and small quantities of dead cellular membrane were discharged. The eruption, however, still existed on the anterior part of the throat, and was extending down the breast; but there was no pain, little soreness to the touch, and scarcely any sympathetic disorder of the constitution.

Decoction of bark was advised, with a nourishing diet, and the application of a blister, should the disorder seem disposed to extend over the abdomen. The bark was tried, but as it purged even when combined with small doses of laudanum, was laid aside. Instead of the blister, a solution of corrosive sublimate, which had recently been recommended in a medical work of authority, was applied to the inflamed surface, which now extended very nearly to the pit of the stomach. This was on the morning of the eighth day from the first appearance of the local disease. I saw the patient in the afternoon. The progress of the inflammation appeared to have been completely arrested by the corrosive sublimate; and the skin wherever the solution had been applied, was much less florid than before; but the subcutaneous parts on the left side of the chest were enormously distended, and as hard almost as a stone, presenting the appearance of an enlarged and inflamed mamma in the female. The tumour was also somewhat painful on pressure, and the integuments were of a yellowish colour, such as we frequently see in a bruised part after the application of lead water. At the same time there were about the patient signs of enfeebled strength which excited no little alarm. A large blister was now placed over the inflamed breast, and a supporting plan of treatment was adopted. The debility, however, continued to increase; and on the following morning we

found him with a cool skin, a faltering pulse, and a hurried respiration; though his mind was perfectly collected, and the state of the tongue indicated the absence of stomachic and intestinal irritation. The erysipelatous affection of the skin was, perhaps, still further diminished; but the swelling and hardness of the breast remained without alteration. Notwithstanding the exhibition of stimulants and nourishment, proportioned, as we thought, to the exigencies of the case, the system rapidly sank, the skin became cold and clammy, the pulse almost imperceptible, the breathing exceedingly laborious; and on the commencement of the fourth day from the use of the corrosive sublimate, the patient expired, retaining the possession of his mental faculties almost to the last moment.

Was death, in this instance, the consequence of debility resulting from the shock which the erysipelatous disease had made upon an aged and weakened frame, or was it produced by the transfer of irritation from the skin to the parts beneath it, and perhaps, to some portion of the contents of the chest? I am inclined to believe, that without this new irritation, the patient might have surmounted the weakness which supervened upon the declining violence of the erysipelas, and that a blister might have safely arrested the downward progress of the superficial inflammation. The same objection does not apply to blisters as to those repellents which produce no permanent impression upon the skin. The former, while they substitute their own action for that of the disease, excite a lasting inflammation, which serves to fix the morbid tendencies of the system in its neighbourhood, and to prevent a sudden transfer to internal and vital organs. The cutaneous inflammation which covered the chest anteriorly was not in itself adequate to the production of the alarming constitutional symptoms. It was attended with little or no pain, and was of that slight superficial kind which we sometimes see spreading successively over every part of the body, without destroying life. Nor in fact did the patient begin to sink, till after the partial removal of the erysipelatous eruption by the mercurial solution. I regret that circumstances prevented me from making an examination of the body after death.

III. A partial suspension of the cerebral functions is well known to be an occasional attendant upon irritation in the stomach. In some instances the symptoms so closely resemble those of diseased brain that the physician is in some danger of mistaking the real seat of the disorder, and consequently of misapplying his remedies. We

may, however, generally form a correct judgment from the preceding history of the case; and when this cannot be ascertained, may often satisfy ourselves by observing the effects of pressure upon the epigastrium.

A young man, an engraver by profession, and subject to dyspepsia, was suddenly attacked about an hour after his evening meal with an affection supposed to be apoplectic. When I arrived he was lying on his back, without motion, wholly unable to see or hear, and showing no sign of sensibility, even when pretty smartly shaken. He had not fainted; for the respiration and circulation continued; and the absence of stertor, with the natural condition of the pulse, was incompatible with the notion that the disease was apoplexy. Having learned that he had eaten cucumbers and whortleberries at his tea, and that he had afterwards complained of headach with some nausea, I had little doubt that the root of the evil would be found in the stomach. An emetic was accordingly administered, which, after a much longer interval than usual, operated freely, and brought away the undigested berries and cucumbers, which were undoubtedly the cause of irritation. Sensibility was now speedily restored; and after an attack of most violent spasm in the bowels, which was relieved by laudanum and castor oil, the patient recovered his usual health. He had never before been affected in a similar manner.

Little more than a month has passed since I was requested to visit a gentleman said to be in a dying state. I found him apparently without sensation, his eyes open and turned up, his hands clenched, and his body alternately motionless, and agitated by sudden and universal tremors, which caused the bed to shake beneath him. He was a stranger, and there was no one present who could give me a history of his case. In order to explore into its nature I placed my hand upon his epigastrium; but scarcely had I touched the skin when he started up as though a bullet had been driven through him. Uncertain whether the coincidence might not be accidental, I repeated the experiment several times, and at each time the slightest pressure was sufficient to throw the whole frame into immediate and violent, through brief convulsions. Sufficient evidence was thus afforded of the seat of the disease, but not of the precise nature of the irritation. As his pulse was active I bled him freely, and immediately afterwards applied a large sinapism over the region of his stomach. Consciousness was so far restored a few minutes after the bleeding, that upon being asked in a loud

voice if he felt sickness or pain in the stomach, he nodded in the affirmative. An injection of assafœtida was now administered; and under the united influence of this remedy and the mustard plaster, he revived to some knowledge of his situation, and was able to drink very freely of warm water, which I urged upon him. This soon produced the discharge of a considerable quantity of acid liquors from his stomach, and restored him for a time to complete consciousness. He now told me that he was subject to gout, of which he had recently had an attack in his foot, but had relieved himself by bathing the affected part with hot vinegar. The nature of the case was evident. While he was yet speaking, he was seized with a sudden spasm of the stomach, which threw him into his former state; and this alternation of consciousness and insensibility was repeated several times within the course of a few minutes, each return of pain being so severe as at first to throw the whole nervous system into violent agitation, and then to overwhelm it for a time in complete torpor. I now applied sinapisms to the feet, and gave a mixture of laudanum and the aromatic spirits of ammonia; and at the end of about four hours from the commencement of the attack, left my patient very greatly relieved. A dose of the compound tincture of rhubarb, with a proper regulation of the diet, was afterwards sufficient to complete the cure.

I might proceed in this desultory way to enumerate many other cases which, at the time of their occurrence, possessed, either from novelty or imagined importance, sufficient interest to induce me to record them; but we are apt to overrate the value of facts which fall under our personal observation, and, perhaps, I should rather apologize for the trivial character of the statements already made, than offer others having no greater claims to attention.

Article III.—*Remarks on the Remedial Value of Arsenic.* By D. Theodore Coxe, M.D.

[Read before the Kappa Lambda Society of Philadelphia, April 22, 1829.]

It is a trite remark that poisons in small doses are our best medicines; and our best medicines in large doses, poisons. This observation will forcibly apply to *arsenic*, upon which I propose at this time to make a few remarks; as no one questions its poisonous nature, and few are ignorant of its remedial value. Though administered in various forms, my remarks will apply principally to the familiar one of Fowler's *solution*, or arsenite of potassa. Except as an escharotic externally, I have myself never employed it in any other shape; and indeed incline to the belief, that in the solid form, from its comparative insolubility and other causes, it must often prove unmanageable and useless, if not dangerous. Many persons even suppose that it does not produce the same effects as when in combination and solution. The case too would very rarely present itself, where the solution would not answer every purpose better than the article in substance, supposing them to be endowed with the same properties. If ten drops contain about the twelfth of a grain of arsenic, and this is a suitable dose to begin with in adults, we can readily guage the quantity to any required circumstances. It may also thus be administered in suitable proportion to the youngest children with perfect safety, and often when it is next to impossible to give any thing else having greater bulk, or a more nauseous and undisguisable taste.

Arsenic was early introduced into the practice of medicine, has occasionally enjoyed high favour with the profession, and is still by some pretty extensively used. From a certain vague prejudice, however, against such articles, and, perhaps, from its having occasionally been productive of more evil than good, and disappointed high wrought expectations, it is not at present so conspicuous in the treatment of diseases, as it would seem to deserve.

Were we to be governed in our estimation of remedies by occasional disappointment, failure, or unfortunate accidents, arising rather from abuse, carelessness, rashness, or idiosyncrasy, than the real properties of the article, which one would stand its ground? Those most in use and most efficacious would be banished; for

each in its turn has had something to answer for, under the heads of inefficacy or injury. It is not philosophical, nor worthy of the present enlightened period, to be influenced by such motives or views.

Arsenic is not so much to be dreaded, as some, in the plenitude of their caution, would have us suppose. If in commencing its use, we are moderate in the dose, and watch its effects, lest idiosyncrasy, or the state of the system should cause it to disagree, and lest subsequently we should carry it beyond the required point, we may give it without apprehension. The dose may be increased, not only gradually, but, comparatively speaking, rapidly; and it would even seem that the system bears it better at the time, is more beneficially affected, and suffers less subsequently, than when the increase is very gradual; and it is for this reason, probably, that the *period* or *time* requisite to produce the same effect is so much greater in the latter than in the former case. In other words, *large* doses (having once ascertained the fact of safety in the individual) continued for a *short* time, frequently produce better effects, are borne better, and affect the system less in the sequel, than the reverse, or *small* doses for a *long* time. That this is not always the case, I readily grant; but being convinced it occasionally occurs, I have thought proper to state the fact, that, being aware of it, we may act accordingly. What is interesting, also, in regard to this article, is that, (especially in some systems) it would seem to have its maximum, and to be told "thus far shalt thou go and no farther;" for cases are on record, where, after being carried, by gradual increase, to a certain extent, not one drop more of increase could be borne, though within and at the ne plus ultra point, it might be given for some time with advantage*.

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* In the third volume of the Philadelphia Medical Museum, a highly interesting case of leprous affection, combined with periodical headach, is related by Dr J. R. Coxe, in which the value of arsenic was very conspicuous, and in which any excess over fifty drops of Fowler's solution, was followed by unpleasant consequences. The case also illustrates the *safety* of the article, as the patient commenced with twenty drops three times a day, gradually increasing the dose, till at the end of six weeks, she took *fifty drops three times a day, and that for several weeks!* For a short time she took sixty drops three times a day, but this disagreed, and she returned to fifty. She took altogether, in the course of somewhat less than four years, between *a quart and three pints*. The remedy had a beneficial effect on both complaints, which returned, however, from time to time, when the medicine was laid aside, but always with diminished intensity.

It will not be necessary for me at this time to prove by examples that arsenic may be given in large doses with perfect safety. These instances are not so few, but that every reader must have met with more than one, even should his personal experience on the subject be limited; and they are so well authenticated, that the most sceptical would be satisfied: hence, we are not now surprised at the detail of cases, in which from 50 to 150 drops of the solution are exhibited with advantage daily, for days and even weeks.

With regard to the diseases in which arsenic has exhibited its best remedial powers, the catalogue is various and extensive. In *fevers*, its favourite field of action is the *intermittent*, though remittents, and even hectic, have yielded to its influence. In these last, however, particular circumstances or coincidences would seem to be requisite to its advantageous action; and indeed the conclusion would appear to be in some measure correct, that an active febrile state is in some way incompatible with its best effects. Certainly, it is more extensively useful in chronic complaints, where little or no fever exists, and in the apyrexia or remission of those which may be called acute, than in the opposite circumstances. Its properties of tonic and stimulant, may, perhaps, in some degree account for these phenomena; and, in corroboration, we may remark, that we are obliged occasionally to prepare the system for its use. Thus, after giving it at first unavailingly, perhaps injuriously, we bleed and purge the patient, and then again resorting to it, we are gratified with its striking and beneficial effects. In fevers then, of a periodical nature, arsenic is of high value; and in *all* affections of an anomalous, irregular description, whenever we detect any evidence of *periodicity*, we may prescribe it with strong prospect of success. In many such cases, its powers seem even to be superior to those of bark or quinine.

In illustration of the preceding remarks, I will here introduce a case, in which the influence of arsenic on the system was promptly and decidedly evinced.

John Phillips, a tailor, about 25 years of age, consulted me under the following circumstances:—Some years ago, whilst living at Lancaster, pursuing his occupation, he was attacked with a singular affection of his eyes, which, though then temporarily relieved, has returned annually and regularly at the approach of summer, ceasing when cold weather sets in: during the winter it is only when, from press of business or other causes, he sits up late at night working, that he experiences any, the slightest inconvenience, in his eyes.

At the time I first saw him, the following were the symptoms. At 4 o'clock, P.M., a dimness of vision came upon him, as if, to use his own expression, a piece of lint were placed upon his eyes. This increased gradually till bedtime, followed, or rather accompanied, by a copious secretion of tears, considerable redness of the tarsi, a sense of weakness in the orbit, and adhesion of the lids, particularly on awaking in the morning. After well washing the eyes he again went to work, suffering little inconvenience until four in the afternoon, when this troublesome guest regularly visited him.

His general system did not appear at all affected. There was nothing like chill, fever, nor swelling: his bowels were regular, his appetite good, strength unimpaired. His eyes alone suffered; and I consequently viewed the case as a quotidian intermittent, showing itself in this way, and attacking exclusively what was, perhaps, from the nature of his occupation, his weakest part. I accordingly directed him to take eight drops of Fowler's solution three times a day, and wash his eyes with a weak solution of sulphate of zinc. I afterwards regretted I had ordered this last; as though I am perfectly satisfied in my own mind on the subject, some may think it had a share in the cure. Be this as it may, after the *first dose of arsenic* the disorder returned no more—a slight debility in the eye for a few days being all that remained.

I would here remark that the Fowler's solution of the shops appears to vary much in strength and goodness; and upon inquiry it would seem to depend upon its age, exposure, and other causes. When it is fresh, not exposed too much to light, and often used, I believe it to be better than when old, constantly exposed to the light of the sun, and little used, *i. e.* kept very quiet.

The remedial value of arsenic in *cutaneous diseases*, especially those of a chronic description, is well known and appreciated. We are often delighted with its effects, after repeated and unavailing resort to other agents. The particular cases in which its utility is most manifest are familiar to the profession. We are acquainted with no remedy more efficacious in *lepra*. In elephantiasis, scurvy, *syphilitic blotches*, and many other similar affections which might be enumerated, it has, when judiciously administered, produced the best effects. The journals of the day are replete with such examples. Presuming, then, that its value in these cases is acknowledged and established, I would merely suggest, that instead of ex-

hausting the materia medica in their treatment before trying the arsenic, and resorting to it as a last hope, we should have recourse to it at once; we should thus save time, and spare our patients much unnecessary inconvenience of various kinds. Offering a better chance of success than most other means, and being perfectly safe, it should on these and other accounts, be preferred.

I shall not here dwell minutely on its alleged powers in *cancerous* diseases, though certainly on this head there is abundant and authentic testimony. Even aggravated cases are said to have yielded to it; but I must confess I regard internal remedies in severe cases of cancer of such doubtful efficacy, that little reliance is to be placed on them. Where, however, the cancerous diathesis is early discovered, and before the system is materially affected, perhaps no remedy offers a better prospect of relief than this, which so thoroughly pervades every part of the animal economy with its perturbating and alterative effects. Other powerful alteratives, as mercury for example, have almost universally I believe been found injurious in this disease; and under these circumstances, we are, perhaps, justified in giving a fair trial to this, which has sometimes proved useful, and even exerted a kind of specific influence in these cases. Witness the striking cures occasionally occurring under the use of nostrums, in which arsenic is known to be the prominent ingredient. And if such events occur from imperfect and empirical treatment, surely we may look for more auspicious results under a judicious and enlightened practice. I repeat it, however, that much of our success in these cases will probably depend on an early resort to this valuable remedy, aided by such other means as the system may seem from time to time to demand.

In evidence of the all pervading influence of arsenic on the system, it may be mentioned that *corns* on the feet are said to have disappeared under its use; and, although this may be thought by some to have been merely a singular coincidence, yet, from the attendant circumstances, I feel disposed to look upon them as cause and effect. However this may be, perhaps few sufferers from this cause would be willing to saturate their system with a poison to insure a better *footing* in society. Whether its local application would answer the same purpose, I am not prepared to say.

This remedy has also been thought by some to have had a stimulant effect on the genitals, somewhat similar to that produced by

cantharides. That this may have been the case in the human system is not at all improbable, reasoning from analogy; as I have myself seen the venereal orgasm evidently and in no slight degree excited in flies who were poisoned with it, and who, in the agonies of death, would approach each other, and perish in coitu.

When speaking of hectic fever, I should have mentioned that the remedial influence of arsenic is much extolled by some in consumption—the fever, colliquative sweats, and diarrhea attendant on such cases being sensibly checked and relieved by it. Instances are even given where the continued use of this article has appeared to prolong the lives of some members of consumptive families, whilst others, in the same families, who did not use it, have sunk into a premature grave.

Were I to enumerate all the diseases in which this valuable article of the materia medica has been of use, I should omit few in the nosological catalogue; but a sufficient number have been mentioned to substantiate its claims to high regard in the eyes of the profession; and having thus fulfilled the purpose I had in view, I forbear any further detail.

Before concluding, however, it will not, perhaps, be without its use to enumerate concisely the effects which usually follow when this substance has disagreed, either from the state of the system, idiosyncrasy, or too large or long continued doses. They are, nausea, loss of appetite, formication, fulness and swelling of the integuments, more especially of the face, pain in the bowels, giddiness in the head, and general malaise and sense of debility. A peculiar hue, or lobster-like redness, has also been not unfrequently observed, particularly in patients labouring under cutaneous disorders. All these, and other symptoms, varying in different individuals, warn us to beware, and will most frequently disappear as soon as the medicine is discontinued. Relief will, however, be often expedited, by the administration of mucilaginous and slightly stimulating liquids, by purgatives, by opium, &c. I do not here speak of those violent symptoms produced by a large quantity of this poison, taken intentionally or by mistake, and acting as a corrosive on the internal organs. Here other treatment would be required; and happy is the physician who, called in such an emergency, can by emesis promptly and effectually discharge the offending matter from the system. All other measures have too often proved utterly unavailing, and show that when once this noxious agent has fully

established itself in the system, its deleterious influence is beyond our control.

There is one point concerning which there seems to be a wide discrepancy of opinion and testimony among physiologists and anatomists; some asserting that the bodies of those poisoned with arsenic putrefy *sooner*, and others *not as soon*, as under other circumstances. Not being able to reconcile these conflicting statements, I leave it, adhuc sub judice, for the consideration of others.

Having aimed neither at originality nor novelty in the preceding remarks, and having merely wished to refresh the memory of my brethren in regard to a valuable remedy, I trust the importance of the matter will excuse all deficiencies of manner in laying it before the society.

ARTICLE IV.—*On Hæmatemesis. By* D. FRANCIS CONDIE, M.D.

In a former number of this Journal*, some observations were offered in relation to the pathology of spontaneous hemorrhages generally; and in a more recent one† an attempt was made to illustrate the views, then advanced, by applying them to the history and treatment of hæmoptysis: with a similar intent, we propose, on the present occasion, to consider the subject of hæmatemesis. The word hæmatemesis signifies literally a vomiting of blood. It is made use of to designate a disease accompanied with a discharge of blood from the stomach; the blood so discharged being often of a dark grumous appearance, mixed with mucus and other contents of the stomach, and in some cases, attended with bloody dejections, various in colour.

It may not be improper here to remark, that hæmatemesis is to be considered invariably as a symptom, and never as constituting the disease itself. It is as absurd to speak of an idiopathic vomiting of blood, as of an idiopathic diarrhea or ptyalism; the disease under which the patient in these cases labours, being strictly the morbid

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* No. VI. page 236.

† No. IX. page 23.

condition of the stomach, intestines, or salivary glands, by which the one or other of these profluvia is produced and kept up, and by the removal of which alone, can either be suspended. But as the hemorrhage in question is, in many instances, a symptom of the first importance, the mere discharge of blood being often so profuse, as to render serious, or even fatal, a morbid condition of the stomach, which might otherwise have been endured with comparative impunity; we trust that this will be a sufficient apology for occupying the attention of our readers with a brief examination into its causes, concomitant symptoms, and treatment.

The phenomena which generally precede the discharge of blood by the mouth in cases of hæmatemesis are, some degree of flatulence, anxiety, lassitude, a sense of tension, with deep seated and frequently pungent pain in the left hypochondrium. The extremities become cold; a sweat breaks out over the body; the face and surface, generally, acquire a pallid hue, the pulse most commonly being small and feeble. The patients sometimes complain of vertigo, ringing in the ears, some affection of the sight, continual inclination to spit, and considerable thirst. These symptoms are said by PINEL to assume occasionally an intermittent character.

When the discharge of blood is connected with inflammation of the stomach, as when it has been excited by the ingestion of acrid substances, the symptoms which precede are those peculiar to such a condition of the organ. When it is connected with engorgement, or other diseased condition of the spleen or liver, it will be found that the abdomen presents more or less intumescence in the neighbourhood of these organs.

The more prominent of the foregoing symptoms increasing in violence, there generally occurs a violent pain in the epigastrium, accompanied by a most distressing nausea, and quickly followed by a vomiting of blood, either liquid or coagulated, various in colour, from a bright almost arterial red, to a dark purple, generally grumous, and mixed with mucus, or the ordinary contents of the stomach.

The vomiting may be attended with more or less straining, or it may take place without any effort. After the discharge of a quantity of blood, varying in extent in almost every case, the uneasy sensations and local pain, previously experienced by the patient, are considerably abated or entirely disappear; and the discharge of blood may itself cease, to be again repeated after a few minutes, or hours,

or not until days, weeks or even months have elapsed, according as the case may vary from the causes by which the hemorrhage has been produced, the remedies employed, &c. When the vomiting has ceased the pulse becomes more developed, the surface loses, in some measure, its extreme paleness, the extremities regain their ordinary temperature; while, frequently, the skin becomes hot to the touch. The tongue is reddened at the point and edges, or, as often happens, assumes a bloody appearance: many times even an effusion of blood takes place from its surface. Not unfrequently, immediately after the vomiting, the patients experience slight colicky pains, followed by stools of a black appearance and fetid odour.

Hæmatemesis is not often accompanied by symptoms of very decided febrile excitement. The pulse is in most cases small and feeble, as in other irritations of the stomach; sometimes it is intermittent.

The duration of hæmatemesis is very various; the discharge of blood may be frequently repeated within a short space of time, or the blood exhaled by the vessels may accumulate in the stomach and fill more or less of its cavity. In this latter case, the left hypochondrium becomes distended, the features of the patient relaxed, his face pale, his eyes sunk and inanimate, and his strength exhausted; syncope soon ensues, or an obscure delirium and cold sweats followed speedily by death.

When hæmatemesis terminates favourably, the intensity of the symptoms gradually abates, and the blood disappears by degrees from the matters vomited, which, at length, become composed solely of a mucous fluid.

If, on the contrary, the disease terminates unfavourably, the vomiting of blood is repeated at short intervals, and frequently large quantities of the same are discharged likewise by stool. In consequence of the excessive loss of blood, the patient becomes sunk into a state of extreme debility. In a great degree his system would appear to be deprived of blood; his face, lips, and entire surface are of a deadly paleness; cold sweats, syncope, delirium or convulsions, and death soon follow.

"Hæmatemesis," observes PINEL, "may degenerate, either of itself, or by the concurrence of a variety of causes, into a chronic inflammation of the stomach, or into organic lesions of that or other organs; or it may produce, as its consequence, abdominal dropsy, dyspepsia, hectic fever, &c."

These terminations of hæmatemesis do undoubtedly very frequently occur, often indeed from the improper mode in which the hemorrhage has been treated; but more generally, we apprehend, they are to be attributed rather to the continuance of the same cause upon which the hemorrhage depended, than to the mere pre-existence of the latter.

The causes of hæmatemesis are very various. It occurs in the greatest number of instances, in individuals labouring under some organic disease of the stomach itself, or of the liver or spleen. It likewise frequently attacks females labouring under a suppression of the menses, or in whom this discharge is about to cease; and men affected with hemorrhoids, the hemorrhage from which has been suddenly suspended. Monro and various other writers enumerate hæmatemesis among the diagnostic symptoms of fungus hæmatodes affecting the stomach. In the late work of Abercrombie on the diseases of the stomach and alimentary canal, a case is related which terminated fatally by a vomiting of blood; and subsequent to death there was discovered an ulcer of some extent in the stomach. An aneurismal condition of the gastric vessels is also laid down by Sauvages as giving rise to this hemorrhage.

In the majority of cases which have fallen under our notice, the hæmatemesis has been accompanied by a diseased condition of the liver, consequent upon long continued and badly managed intermittent or remittent fever. The premature suppression of the former, is ranked by Pinel among its causes. In referring to the treatise of Latour upon hemorrhages, we find that, in the cases cited by him, of what he terms splanchnic hæmatemesis, in the majority, the vomiting of blood was connected with organic alteration or engorgement of the spleen.

Hæmatemesis may likewise be produced by any cause capable of exciting irritation or inflammation of the stomach; as blows or falls upon the epigastrium, irritating or corrosive substances introduced into the stomach, emetics, emmenagogues, the excessive use of spirituous liquors, &c. The hemorrhage has been known, also, to be brought on frequently by violent paroxysms of anger, by sudden alternations of atmospheric temperature, and by immersing the feet or hands in cold water while the body is in a state of perspiration.

What is the morbid change in the vessels of the stomach giving rise to a vomiting of blood? This is the important question, upon

a correct solution of which the suppression of the hemorrhage, and in a great measure its prevention, will depend.

Upon the nature of spontaneous hemorrhages generally, and in relation to almost every point connected with their pathology, our ideas were vague, hypothetical and erroneous previously to the time of BICHAT, who, by his beautiful views upon exhalation, threw at once upon this subject that light, by which subsequent observers have been directed to the formation of a more rational and correct theory in regard to their nature and production.

We conceive that all the phenomena connected with hæmatemesis indicate that it depends upon an irritated or congested condition of the capillary system of the stomach, giving rise to an exhalation of blood: or in other words, hæmatemesis is the product of a hemorrhagic irritation seated in the mucous membrane of the gastric cavity.

To adduce all the arguments in favour of this opinion would cause us far to exceed the limits we are permitted to occupy on the present occasion. They are founded principally upon the nature of the remote and exciting causes, the accompanying symptoms and terminations of the hemorrhage, and the appearances brought to light by post mortem examinations.

PINEL has very correctly remarked that "hæmatemesis is capable of being complicated with different degrees of irritation, or even of inflammation of the stomach;" and we have seen that almost all the exciting causes are the same as those by which irritation or inflammation of that viscus is ordinarily produced: and even the organic alterations of the stomach, with which the hemorrhage is most frequently connected, are such as are either the product of, or are known to produce, an irritation in the parts in which they are developed. The connexion of hæmatemesis with gastritis is also noticed by BOISSEAU in the "Nosographie Organique;" while, in a very excellent paper on chronic inflammation of the stomach, drawn up from clinical observations, contained in a late periodical work*, it is stated that in many instances the disease was accompanied by a vomiting of blood to a considerable extent.

The precursory symptoms of hæmatemesis are the same as those which result from ordinary irritations of the stomach; and very often

* Jahrbücher der Ambulatorischen Klinik zu Halle, Vol. II. p. 260, et seq.

the hemorrhage is attended with pain, or at least tenderness of the epigastrium, great thirst, and occasionally fever.

In almost all the cases we have observed, gastric and febrile symptoms have at least preceded the discharge of blood. The existence of fever in connexion with hæmatemesis was noticed by HIPPOCRATES, who considered this complication to render the prognosis less favourable: "Qui sanguinem vomunt, si quidem sine febre, salutare; si vero cum febre, malum.*" And PINEL makes nearly the same remark. "The disease," he says, "carries with it a real danger when accompanied with fever; for then we have cause to suspect an inflammatory affection, or even an organic lesion of the stomach, particularly when the disease continues for a long time."

It has been remarked that the effusion of blood from the stomach frequently takes place as a critical discharge in certain fevers, producing a solution of the disease. It is unnecessary to dilate upon this fact in order to show its bearing upon the point in question.

The existence of irritation of the stomach as a cause of hæmatemesis is further proved by its terminations. We have already said that the hemorrhage may degenerate into chronic gastritis, dyspepsia, organic alteration of the stomach, &c.† This is precisely similar to what occurs when hæmoptysis gives place to chronic pneumonia, abscess of the lungs, hepatization, &c., and indicates the intimate connexion between irritation or inflammation of an organ and spontaneous hemorrhage. Hæmoptysis has been known suddenly to cease, and be immediately succeeded by all the symptoms of acute inflammation of the lungs; so also the discharge of blood from the stomach may be suspended and give place to acute gastritis‡. Phenomena which so readily change into one another we have a right to conclude depend upon the same or very similar causes.

On referring to pathological anatomy for a solution of the present question, we find that the examination of the bodies of those who have died of hæmatemesis presents various morbid appearances of the stomach and other chylopoietic viscera. When it has been acute, and the discharge of blood considerable, destroying life very speedily, frequently no traces of disease are discovered in the stomach: in other instances its mucous membrane presents

* Aphorisms, Sec. VII. 37.

† Nosographie Organique, Tom. I. p. 278.

‡ Ibid. loc. citat.

traces, to a greater or less extent, of inflammation; or this membrane has a dark appearance, its vessels being considerably dilated. M. PORTAL was able, in some instances, by injecting the gastric vessels, to throw the matter of the injection into the stomach. The stomach has likewise been found ulcerated, in various states of morbid alteration, affected with fungus hæmatodes, &c. A case of hæmatemesis is related by Dr MARTLAND, in one of the numbers of the Edinburgh Medical and Surgical Journal, in which the whole of the mucous membrane of the intestinal canal appeared, upon dissection, in a more or less gangrenous condition. In the stomach was contained half a pint of dark grumous blood. The liver was of a pale brown colour, smaller than natural, with a shrivelled, fissured surface, containing neither blood nor bile. In RUST's Magazine for 1828 an account of another case occurs, in which a violent vomiting of blood was followed in eight days by death. The stomach on examination was found to be in a state of inflammation, with softening, to a considerable extent, of all its coats.

Subsequent to this hemorrhage, the liver is also discovered to be variously diseased, from simple engorgement to a state of complete scirrhus. The spleen is either indurated, or cartilaginous, or very soft; its parenchymatous structure being, to a greater or less degree, distended with black blood. The pancreas, in a few cases, has likewise presented more or less of a diseased condition. As our authorities for these facts we refer to the works of HOFFMAN, MORGAGNI, PORTAL, LATOUR, PINEL, &c.

We have remarked the frequency with which hæmatemesis is connected with a diseased condition of the liver and spleen; and we may here inquire how far the opinion entertained by many is true, which refers the production of this hemorrhage to an obstruction in the circulation through the veins of the stomach, and a consequent congestion of those vessels, produced by the diseased condition of the organs first mentioned. This doctrine was the one maintained by CULLEN. By GOOD the chief origin of hæmatemesis is referred to a venous congestion taking place in the vena portarum, after thirty-five years of age, which congestion alone, it is supposed, will frequently act upon the neighbouring arteries, and induce "what may be called a reflex plethora upon them, in consequence of their inability of unloading themselves."

But even if we were to admit that interruption to the free return of blood from the stomach can give rise to an engorged state of its

vessels, and to a certain extent the fact is such, this will occasion no difference in the mode in which we suppose the hemorrhage consequent upon such congestion to be produced: it must still be by a hemorrhagic action of the capillary tissue, and neither by rupture, nor by the passage of the blood through the gaping extremities of the veins. We find that from the serous surfaces this same congestion produces an exhalation of a serous kind, giving rise to dropsies. Our own opinion is, that whether congestion be produced by impediments to the free circulation through the veins, or by any other cause, the actions subsequently set up in the capillaries of the part will be nearly the same in either case.

By the investigations of PORTAL, that peculiar affection in which considerable discharges of blood, of a very dark appearance, take place from the stomach, and frequently at the same time from the bowels also, to which the names melæna, morbus niger, profluvia melancholia, &c. have been given by the older writers, and the nature of which has given rise to not a little discussion, has been proved to be actually a hemorrhage from the stomach. According to this author, the blood in melæna, as well as in every variety of hæmatemesis, is exhaled from the mucous coat of the stomach; and after death, blood of the same black appearance as that which had been discharged by vomiting and stool, can be pressed from the vessels which open upon the internal surface of that organ.

Melæna has almost invariably been set down as a venous hemorrhage; but, observes PINEL, "the black colour of the blood discharged is not a sufficient reason for distinguishing melæna from hæmatemesis; because it is a well known fact, that when the blood, by whatever cause effused from the vessels, is retained for any length of time in the stomach, or the other cavities of the body, it will acquire this tint. This is the case with the stools, more or less of blood, which we occasionally meet with in acute hæmatemesis. There is, therefore, no difference between the seat and nature of melæna and of other hemorrhages from the stomach, excepting that hæmatemesis is, for the most part, an acute, melæna a chronic affection; an observation long since made by TISSOT in reference to these diseases."

We may here add, in regard to the colour of the blood in hæmatemesis, that we have found it in the same attack, sometimes black, and sometimes of a bright red: even during the same access of vo-

miting, at first of a very dark, nearly black hue, it has become subsequently almost arterial.

The particular form of stomachic hemorrhage denominated melæna, is peculiarly liable to attack such individuals as have inhabited for any length of time tropical climates; those who have had repeated attacks of intermittent fever; habitual drunkards; those who lead a sedentary life, &c.

We know not whether it be necessary to enter into a refutation of the opinion once entertained, that hæmatemesis is frequently caused by a rupture of the blood vessels of the stomach, particularly of the spleno-gastric veins. MORGAGNI, in his thirty-sixth epistle, section 12, has entered into a long discussion, in which he has proved, that the supposition of such a rupture existing as a cause of gastric hemorrhage is, in almost every case, erroneous. "Many subjects," he remarks, "having been dissected, after enormous and fatal discharges from the stomach of a bloody fluid, there was not discovered any trace of the rupture or erosion of a vessel in that viscus. Besides, the vasa brevia were found to be very small, although the spleen was much enlarged, and their radicles extended themselves to the exterior of the stomach only, and did not penetrate to the interior coats." Many observations of a similar kind are to be found in the Sepulchretum of BONETUS. VAN SWIETEN also, in his commentary on BOERHAAVE's aphorism 350, informs us, that on examining with great care the whole of the abdominal viscera, subsequent to death from hæmatemesis, he could find no trace of a ruptured vessel, nor any remarkable lesion. PINEL remarks likewise, that nothing in fact is more rare than the rupture of the gastric vessels, as a cause of hemorrhage, of which writers have said so much.

Few will be found, we suspect, at the present day, inclined to advocate the antiquated doctrine of a ruptured blood vessel in hæmatemesis: should, however, there be such, it is their duty to demonstrate the fact, rather than ours to refute it. All we can say, in the mean time, is, that the whole of the facts heretofore collected, are adverse to its admission.

So well convinced were physicians at one period, that the blood in this hemorrhage came from the vessels of the spleen, that it was denominated in the writings of ETTMULLER and many others, "*vomicus spleniticorum.*" Pathological anatomy has not, however, in any instance confirmed this opinion*.

* See BOISSEAU, Nos. Organ. Tom. I. p. 279.

Ulceration of the stomach is indirectly hinted at by ABERCROMBIE in his late work on the diseases of the stomach, &c. as being capable of producing even fatal hæmatemesis. The correctness of this idea we very much doubt. Blood may be effused from the surface of an ulcer, we are aware; but ulceration of the stomach must be very extensive indeed, or the hemorrhage produced by it will be scarcely appreciable. Peculiar varieties of ulcer, however, with fungous growth, give origin occasionally to very serious discharges of blood; not however by opening large vessels, as some have supposed, but by exhalation*.

On the subject of the prognosis in cases of hæmatemesis, we find ourselves at a loss how to reconcile our own experience of the fatality of the hemorrhage, when not opposed by an appropriate treatment, with the opinions of writers and of our friends in the profession, who look upon it, under ordinary circumstances, as of very little importance; some even considering it as salutary. The aphorism of HIPPOCRATES, that a vomiting of blood without fever is beneficial, has been already quoted. "When hæmatemesis occurs periodically," says ETTMULLER, "it is the most beneficial. When blood alone is discharged, if it be not in too great quantity, it is for the most part salutary." So also, the same writer declares, that when the hemorrhage arises from external causes, or from suppressed menses, "salutaris potius est, quam periculosus." According to CULLEN, hæmatemesis "is hardly ever a dangerous disease;" and DARWIN expressly declares, "that when the blood is evacuated by vomiting, it is less dangerous than by the bowels; and it is sometimes salutary to those who have diseased livers."

Notwithstanding the respectable opinions just quoted, we must be allowed to say that, generally speaking, we have found a vomiting

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* Notwithstanding what is asserted above as our deliberate opinion on the subject of ulceration as a cause of gastric hemorrhage, it is proper to mention, that a late writer of respectability expressly declares, that he has detected the opening of a bloodvessel from ulceration in cases of violent hæmatemesis. "Extensive discharges of blood from the stomach," he remarks, "occurring in the latter stages of chronic gastritis, were invariably a fatal symptom. In such cases it was found after death, that a bloodvessel of some size had been opened in the stomach by ulceration." Krukenberg. Jahrbüch. der Ambulat. Klinik, Vol. II. p. 274. BOISSEAU likewise observes that in the stomachs of those who have died of hæmatemesis, "vessels have been found, very rarely however, dilated and ruptured, in the midst of ulcerated portions of the mucous membrane."

of blood to be an affection of a very serious character. We have known it in a few hours to terminate life; and whenever it has been of any extent, the exsanguine appearance of our patients, the pale lip, sunk and inanimate eye, the tremulous pulse, slow and scarcely perceptible breathing and cold extremities, have convinced us, that to allow the hemorrhage to continue for a very short time longer would be to extinguish inevitably the remaining spark of life. We admit that very often the discharge of blood is of far less importance than the disease of the stomach by which it has been produced; though often, even when the latter is of a nature capable of being cured by an appropriate treatment, an opportunity for the employment of such treatment can be obtained only by first suspending the hemorrhage. Hæmatemesis ought never to be considered, therefore, a trifling or unimportant symptom; on the contrary, it is one which is always to be met by prompt and energetic, but at the same time judicious measures.

The more healthy the constitution of the patient, the greater certainty is there of a permanent suspension of the effusion of blood. When, also, it is of recent occurrence, the cause by which it is produced, accidental; when excited by a violent fit of passion, by cold, or by slight external violence; when connected with suppressed menses, the discharge of blood being moderate in quantity and from the stomach only, we have then every reason to hope speedily to suppress it. Symptoms of organic alteration, to any extent, of the stomach or liver, or a state of things contrary to those enumerated above, should induce us to form an unfavourable prognosis: under the best devised plan of treatment, hæmatemesis will in such instances almost always prove fatal.

We have already seen that the generality of systematic writers have looked upon the occurrence of hæmatemesis as a circumstance of very little importance; and hence we are not to expect from their works any minute directions for its treatment. They have contented themselves with a general direction of the ordinary remedies supposed useful in other hemorrhages; as the acetate of lead, alum whey, sulphuric acid, the tincture of the muriate of iron, other preparations of this metal, the astringent wines, &c. Of these, misled by the directions of such writers, we were, in the commencement of our medical career, induced to make trial; and we found, that so far from any benefit resulting from their administration, they not unfrequently augmented the discharge of blood, or when

they did arrest it, left us to treat a morbid condition of the stomach, speedily terminating, notwithstanding all our remedies, in death. By the older writers, when they did not consider the occurrence of the hemorrhage as the best, or indeed the only cure for engorgement of the abdominal viscera, the mode of treating it is considered at some length; but from false ideas as to its cause, the remedies they direct are generally equally injudicious with those first noticed. It is indeed only in a few of the more recent medical authors, and these principally of the continental school, that any thing like a rational plan for the management of hæmatemesis is to be met with.

Of course, the patient is to be kept in a state of perfect quietness. All ligatures, as well as such parts of his dress as press upon the abdomen, are to be removed, and the air of his chamber rendered rather cool than warm.

When the hemorrhage occurs in young persons, whose constitutions possess some degree of tone; when it is recent, and accompanied with much local pain and a hard, though small and contracted pulse; when it has arisen from external violence, from the ingestion of corrosive or irritating substances, or from exposure to cold,—venesection will be demanded. But in general, even in such cases, local depletion, particularly by cups to the epigastrium and over the region of the liver, is to be preferred. If the bowels are constipated, or are supposed to contain any matters capable of keeping up the irritation of the stomach, they should be gently evacuated by means of some mild enema. The thirst, which is often considerable and distressing, may be allayed by simple mucilaginous drinks, taken cold and slightly acidulated. We have found in these cases nothing preferable to toast-water.

When the hemorrhage has succeeded to a suppression of the menses, or of the hemorrhoidal flux, we are directed by the French practitioners to endeavour, as quickly as possible, to re-establish these latter evacuations, by the application of leeches to the vulva, or to the verge of the anus, as the case may be; by the use of stimulating pediluvia, made by infusing mustard in hot water, hot brine, &c. Hippocrates had already said, that "females affected with a vomiting of blood are cured when the menstrual flux takes place." The administration of emmenagogues is, however, to be carefully abstained from.

It is very desirable that we should be in possession of a remedy capable of suspending promptly the discharge of blood; that, in this

way, we may gain time for the employment of the means calculated to remove the morbid condition of the stomach giving rise to the hemorrhage, and by a continuance of which it may be expected to be kept up, or reproduced, after a short interval. This remedy we are persuaded is to be found in appropriate doses of ipecacuanha.

To this article the attention of the profession was first directed by a paper published in the fourth volume of the Transactions of the Dublin College of Physicians: in this Dr SHERIDAN reports five cases of hæmatemesis, in which the ipecacuanha was employed with the best effects. In the first of these cases the loss of blood had so far exhausted the patient's strength, that her pulse was scarcely perceptible, and her look was ghastly. The discharge of blood still continuing, death was momentarily expected. Thirty grains of ipecacuanha were immediately administered: the vomiting at first ceased for a few minutes, but then recommenced, and the patient threw up a quantity of clotted and fluid blood, the last of which was mixed with mucus. After this the vomiting entirely ceased, but she lay in an alarming state of exhaustion, pale and inanimate; the pulse and respiration scarce perceptible, and the animal heat almost gone. To rouse her from this state, warm flannels were directed to be applied to her extremities, with the lightest nutriment, and cordials in the smallest quantities, internally. In a few days she recovered a little strength; but soon after there came on considerable anasarca and ascites, which, however, gave way very readily to the use of aperients and diuretics, and the patient was soon perfectly recovered.

In another case, after a very considerable discharge of blood, the disease having continued at intervals for twenty-four hours, an emetic of ipecacuanha was administered. It remained some minutes on the patient's stomach, and then operated in three or four fits of vomiting, by which he threw up more than a pint of dark grumous blood. Here all the symptoms subsided: he found himself perfectly relieved; heat gradually diffused itself over his whole surface, which had been before cold: he fell asleep, a gentle perspiration ensued, his pulse became full, soft and regular, and he felt himself more free from pain, oppression or sickness, than he had for years before. The day after, he took a mercurial purge, which brought away from his bowels a great quantity of matter similar to what he had discharged by vomiting, but much darker, resembling the discharges in melæna. After the commission of some imprudences, the local symptoms, pain and oppression, &c. returned. A

repetition of the emetic removed these, and his state of improvement was restored. The three remaining cases are of a very similar character.

Our own experience of the efficacy of ipecacuanha in suspending the vomiting of blood is as decidedly in its favour as that of Dr SHERIDAN.

In the foregoing cases, it is very evident that the ipecacuanha was administered with a view to its emetic effects. The production of emesis, however, is altogether unnecessary. We have, in many instances, seen the article succeed in arresting the discharge of blood without its inducing either vomiting or even nausea; and, whenever it is possible, we are persuaded that both these effects should be guarded against.

Emetics, it is true, have been proposed as a remedy in this and the other varieties of hemorrhage. In hæmatemesis, they are spoken of by BRIEUDE, in the Memoirs of the Society of Emulation, and by GIRARD, in his dissertation upon the disease, published in 1815. These gentlemen, however, confine their use solely to those very dangerous cases in which the blood accumulates in the stomach. The first writer we have met with, who recommends emetics as the principal remedy in this species of hemorrhage, is DARWIN. While in the third number of the American Journal of the Medical Sciences, Dr CHAPMAN relates one or two cases of hæmatemesis in which they were administered with the best effects.

But as we have already remarked, we are well convinced that the ipecacuanha acts, in arresting the discharge of blood from the stomach, by an impression upon this organ independent of the mere act of vomiting. When the modus operandi of the materia medica shall have been studied in reference to established physiological and pathological facts, it will be discovered, without doubt, that various remedies, including the one under consideration, have an immediate effect upon the mucous membrane, controlling or modifying the morbid conditions of its capillary system; and in this manner removing the irritation by which hæmatemesis, as well as other pathological phenomena, are produced. Let this, however, be as it may, it is a fact that, from its first introduction into practice, the ipecacuanha has been considered a remedy of considerable efficacy in many of the diseases of the mucous tissue; while our own experience, in connection with that of Dr SHERIDAN, has shown it to be one of the

most prompt and certain means for arresting the discharge of blood in gastric hemorrhage.

The three following cases, briefly sketched, will show our mode of employing the remedy and its effects.

In the summer of 1827, we were requested to see a young woman who was vomiting blood. The patient was about eighteen years of age; she had suffered for a long time from attacks of intermittent fever, which had been finally suspended by large doses of the bark. She did not, however, recover her health; but remained in a state of languor, without appetite; her bowels constipated, the skin of a sallow hue, dry and harsh, her tongue foul. Occasionally she felt chilly and was immediately afterwards flushed with heat. She complained of pain in the head, and disinclination to motion. Menstruation was suspended, some tumefaction was experienced in the right hypochondrium, with tenderness of the epigastrium, and, frequently, violent attacks of gastralgia. When we saw her, she was discharging large quantities of dark coloured blood, partly fluid and partly coagulated; her face was pale, pulse small and feeble, tongue pointed, and red at the edges. Twenty grains of ipecacuanha were directed in one dose. This was taken late in the afternoon, and produced considerable vomiting, first of pure blood, then bloody mucus, and finally mucus alone. She now fell asleep, and awoke the next morning without nausea, but much exhausted. Her bowels were directed to be opened by an enema, and toast-water alone for food and drink. There was no return of the hemorrhage: in a few days remedies adapted to the morbid condition of the stomach and liver were entered upon; and the patient finally recovered, and has remained perfectly well to the present day.

In the spring of the same year we had under our care, with vomiting of blood, a female 46 years of age, of a robust habit and dark complexion. She had suffered for some time previous from irregularities of the menstrual flux, with a feeling of weight and uneasiness at the præcordia; occasionally dull pains in the epigastrium; frequent chills, followed by a burning heat of the skin; lowness of spirits and deficient appetite. For the few days before our visit she had frequently thrown up a quantity of blood by vomiting, and was then discharging it profusely. The pulse was contracted; skin dry and harsh, its temperature being somewhat increased; tongue furred in the centre, very red at the margin. Directed a scruple of ipecacuanha to be divided into four powders,

one of which to be administered every hour. After the first had been taken, the vomiting was suspended: the remedy produced neither nausea nor vomiting. The ensuing day the patient was confined to toast-water; twelve ounces of blood were taken from the arm, and a purgative of calomel administered. The hemorrhage did not return, and an appropriate treatment very soon removed all symptoms of gastric disease. This patient has since enjoyed uninterrupted health.

A female 43 years of age, during the summer and autumn of 1828, had suffered from frequent attacks of fever and ague: emetics, purgatives, arsenic, and quinine were the remedies employed for its cure. The regular paroxysms of the fever had by these means been suspended; but the patient was left in a state of great muscular weakness, disinclined to motion, without appetite, and depressed in spirits. Her bowels were constipated; she was subject to frequent rigors succeeded by flushes of heat, and a burning in the palms of the hands; and there was considerable tumefaction of the abdomen, tenderness, with dull constant pain of the epigastrium, and great thirst. About the 10th of January last she was attacked with hæmatemesis: the discharge of blood was profuse, and when I saw her she presented all the appearances consequent upon excessive hemorrhage. A scruple of ipecacuanha in four powders, one to be taken every hour, was directed. Soon after the powders were commenced with, the hemorrhage ceased; but great thirst and nausea still continued. The next day the vomiting of blood returned, but not to so great an amount. Twenty grains of ipecacuanha were given at once, and a considerable quantity of mucus coloured with blood was brought up, when the hemorrhage and vomiting ceased. About two weeks subsequently the discharge of blood returned, but was immediately suspended by small doses of the ipecacuanha—three grains every hour. Notwithstanding every remedy subsequently employed in this case, the disease of the stomach and liver was of such a nature that the recovery of the patient has been extremely slow. As the gastric symptoms by degrees abated, an ascites was gradually developed, from which she is now rapidly recovering; and I have every prospect of being shortly able to restore her to perfect health.

Equally efficacious with the ipecacuanha, in the suspension of stomachic hemorrhage, we have found to be the administration of minute doses of calomel; say from one quarter to half a grain every

hour. The remedy in these doses we have repeatedly employed, and never without the desired effect. Whether there is any difference in the set of cases to which one or other of the foregoing plans of treatment is particularly adapted, we have ourselves not been able to determine. The small doses of calomel will, of course, be preferred, whenever it may be deemed improper, or inexpedient, to risk the production of vomiting, an effect which will frequently result from even inconsiderable doses of the ipecacuanha; but in all cases in which the hemorrhage is profuse, and it is apprehended that the patient may speedily sink under it, we would prefer the latter, in consequence of the greater promptness with which it acts in suspending the effusion of blood.

After the violence of the hemorrhage is abated, we have experienced beneficial effects, in cases connected with hepatic disease, from the application of a blister in the neighbourhood of the liver.

In hæmatemesis occurring in females between eighteen and thirty years of age, preceded by great languor and oppression about the chest and præcordia, a sense of fulness in the latter, cough, dyspepsia, and sometimes pain in the breast, loss of appetite, headach, vertigo and disturbed sleep, a dulness of the eyes and a countenance expressive of much distress, a feeble pulse and constipated bowels,—Dr Hamilton has found, he declares, that the proper exhibition of purgatives, so as to produce a free evacuation from the bowels, affords an effectual means of removing the hemorrhage. "Suspended menstruation," remarks Dr H. "is not a necessary concomitant of this species of hemorrhage." Calomel was the purgative generally employed by this gentleman in these cases.

We have, also, treated stomachic hemorrhage by the administration of scruple doses of calomel; and in some instances with the most prompt and decided good effects. In general, however, we prefer the employment of the calomel in the small doses already indicated. From any other of the list of purgatives we should anticipate harm rather than advantage in hæmatemesis.

It cannot be expected that we should here enter into an enumeration of the measures proper to be pursued, subsequent to the suppression of the hemorrhage, in order to prevent its return. These will depend entirely upon the nature and extent of the morbid affection of the stomach and other viscera which are found to be present. Leeches to the stomach, a very plain and restricted diet, abstinence from all violent exercise and mental excitement, and the careful pro-

scription of all tonics, astringents, and stimulants, will in almost every case be demanded.

The existence of fungus hæmatodes of the stomach, or of extensive organic alteration of that or any other viscus, will, of course, preclude all hopes of effecting a permanent cure.

ARTICLE V.—*On Emphysema of the Lungs as a Cause of Asthma; with two Cases.* *By* B. H. COATES, M.D. *one of the Physicians to the Pennsylvania Hospital.*

[Read before the Kappa Lambda Society, April 22, 1829.]

Asthma is a disease which has long been peculiarly embarrassing to the physician, from the excessive sufferings it occasions, and from the strong presumption of its never admitting of a cure. Any thing, therefore, that seems to promise a closer and more accurate discrimination of the different morbid changes which produce its symptoms, and in which it appears to consist, can hardly fail to be warmly welcomed by the philanthropic physician.

It is my object, in the recital of the two following cases, and in the remarks which follow them, to endeavour to show that emphysema of the lungs is of far more frequent occurrence than is commonly supposed; that it is an abundant cause, or rather means of increasing and perpetuating asthma; and that it is liable to be caused by various preliminary morbid changes, as, in these two instances, by tumours pressing on the trachea near its bifurcation.

Case 1.—*Asthma. Violent fits of spasmodic cough, threatening suffocation, and producing a longing for fresh air.—General emphysema of the lungs, with escape of air into the cellular tissue of the organ; bronchitis; aneurism of the arch of the aorta:—*

The notes of the following case were not prepared at the time. The dates are taken from records; while the description of the symptoms and of the morbid appearances, is drawn up from memory and inquiries. The statement of the results of dissection was

subjected to the review and approbation of Dr W. D. GALLAHER, who kindly assisted me in the examination.

John Golder, a seaman, a native of New Jersey, aged about 35 years, was admitted into the Pennsylvania Hospital, August 18, 1828. He complained of the symptoms usually given as characterizing spasmodic asthma. His thorax was found of a large size, equal on the two sides and rounded. The motion of inspiration was quicker than that of expiration. On tapping the thorax with the fingers, and, about the same time, doing so to a person with healthy lungs, placed alongside of him, the thorax of Golder emitted a sound by far more distinct and hollow. The difference was perfectly perceptible to a number of auditors assembled together. No such difference was found between the opposite sides of the thorax. The respiratory murmur was much less distinct than in the natural state. No striking rattle of any character was perceived.

The patient was pronounced to suffer under emphysema of the lungs. He was placed under the common palliative treatment; consisting chiefly of strong anodynes, of occasional bleedings, and light diet of easy digestion. Temporary relief was experienced; and, after several fluctuations, he took his discharge on the 30th of August; and in the night of the 28th or 29th of September, he sent for me to his lodgings. I found him in a violent paroxysm, of which he had frequent returns, rapidly increasing in severity and continuity, until the 2d of October, when he died. These attacks were characterized by a dark and ghastly countenance, cold sweats, a pulse at last nearly imperceptible, incapability in general of resting in an inclined posture, and an anxious desire, even when excessively cold and unable to speak, of sitting by the open window. No other treatment remained to be tried than that employed before; and this was put in practice with exactly the same momentary relief. The patient had frequently complained of great distress in the central parts of his thorax; but without any acute pain, tearing sensation, or other symptom particularly referrible to the arch of the aorta.

Dissection. On stripping the corpse, a slight projection of the upper bone of the sternum was observed. This had not been noticed during life. The body had lost much of its muscularity, but the cellular membrane was bulky.

On opening the thorax, the lungs were found completely to fill the cavity, and did not collapse. The air cells were visible on the

surface, and appeared about the size of millet seeds. Numerous small collections of air were also found in the cellular tissue of the lungs; as was evinced by the facility with which it could be impelled from one point to another with the finger. A small portion of serum was found in each pleura; which membranes were otherwise healthy. An unusual amount was also found in the pericardium; but this cavity and the heart were healthy.

Behind the first bone of the sternum was found a large tumour of considerable solidity; which proved to be an aneurism of the arch of the aorta, embracing the origins of the arteria innominata, left carotid, and left subclavian. The sac was nearly as large as a man's fist; and had evidently been the cause of the projection of the first bone of the sternum.

The trachea was found permanently changed in its figure where it had passed across the tumour. Its lining membrane was considerably inflamed; as was evinced by a smart red colour, and an increased amount of mucus.

The abdomen presented nothing remarkable, and the head was not examined.

The excessive dilatation and subsequent rupture of the air vessels of the lungs are consequences so natural after attacks of violent coughing, that it seems hardly necessary to employ much reasoning to demonstrate their probability. Accordingly, M. LAENNEC ascribes their production to that cause. In the present instance, it is, I think, evident that the aneurismal enlargement was the original cause of the cough; both by its direct irritation, by its distention of the surrounding plexus of nerves, and, finally, by its pressure on the trachea. Inflammation of this latter organ could have been separately produced; but, if this were not the case, the pressure of the arterial tumour was abundantly sufficient to give rise to it. The combined agency of all these causes was enough to account for a cough of such a character as is commonly directed to the removal of substances causing irritation in the trachea and its vicinity. When, by repeated and violent efforts, were added to this, first the over distention of the air cells of the lungs, and then their rupture, with the free effusion of air into the common cellular tissue of those organs, there were produced the further symptoms of a sense of suffocation, respiration limited in the extent of its motions, and at the highest state of dilatation of the thorax, giving rise to great labour and fatigue in

the muscles employed in that function, extreme anxiety for fresh air, and convulsive, laborious, often repeated efforts to expel, by coughing, some bulky substance from the cavity of the chest. M. LAENNEC is of opinion that the anxiety for *cool* air, so peculiar to asthmatic affections, arises from the greater density of such, and the consequent more free supply of oxygen. I have heard doubts expressed of the capacity of the lungs for perceiving such a difference of density; but it appears to me that the fact is really so, the denser states of the atmosphere, as indicated by the barometer, always being more agreeable to respiration; though by inattentive observers, this circumstance is referred to coolness or dryness alone. In cases like the present, no reason can easily be assigned why coolness should in itself be agreeable, as the phenomenon in question was exhibited at periods of extreme coldness and prostration; and some other quality possessed by cool air must be looked for. Now, in a state of things where the lungs are so much enlarged as to distend the thorax beyond its natural size by their elasticity,—constituting it a plenum in its ordinary state of semi-inspiration, it does not appear unreasonable to suppose that the density of the small portion of air which can still be renewed at each inhalation may become a matter of great consequence.

In the following case, emphysema of the lungs will appear in a different distribution of the effused air, and at an earlier period of life; while, in the original cause of the attack, as inferred from the dissection, there will be found a singular resemblance.

The notes were made at the time of dissection; and the particulars of the previous symptoms collected by minute and careful inquiry, after the morbid appearances became known.

Case 2.—Chronic bronchitis; cholera infantum; asthma; picking at the nose; two years of age.—Emphysema of the lungs in huge masses, with a collection of air over the pericardium; pleurisy; strong cellular adhesion; tumour of the thymus body and lymphatic ganglions, pressing on the trachea; trachea inflamed; colon contracted; mucous membrane natural.

W—— H—— L——, who died aged two years and five days, was the child of healthy parents, natives of Denmark, and appeared to possess tolerable health, till about ten months old. About this time, being towards the end of winter, she appeared to suffer from repeated colds. To these, however, the parents did not think the

assistance of a physician necessary. No peculiarity was then noticed in her cough. Early in the summer of 1828, she became affected with cholera infantum; to prescribe for which, my friend, Dr A. B. Tucker, was sent for. Dr T. treated the attack chiefly by astringents; and, after some teeth were cut, the child improved so much in health and flesh, that Dr T. discontinued his visits. At that time, the cough was not considered as of very particular consequence; and, about October, at eighteen months old, the child was weaned, in consequence of a deficiency in the supply of its parent's milk.

About six weeks before its death, the child's cough became very severe, with great apparent danger of suffocation. It was found necessary to hold it upright during the paroxysms; which were convulsive and fatiguing. About the same time, it became subject to smart bleedings at the nose. It was observed to be worse after eating. An increased quantity of mucus was expectorated. It was partially relieved by syrup of squills, the only medicine which was given to it. A short time previously to its death, it was affected with diarrhœa; but whether this had been of long continuance, we have not ascertained. The parents suspected worms; as the child was observed to pick its nose. None, however, were discovered in its discharges. No symptoms were observed in any way indicative of pleuritis. Dr T. was again called in, but found it in a dying state. The termination of its life took place soon after, apparently by actual suffocation.

Dissection, April —, 1829, sixteen hours after death. Body not much emaciated; remarkably enlarged along the lower end of the thorax. A small quantity of yellowish serum ran from the nose.

Thorax. Right pleura contains about an ounce and a half of yellowish serum. Its surface, vascular, and redder than that of the opposite side. An adhesion of considerable firmness, an inch and a half long, and three quarters of an inch wide, between the anterior part of the right lung and the mediastinum. Several large collections of *air* over various parts of the surface of both *lungs;* particularly a large one in the cellular substance of the before-mentioned adhesion, and extending in front of the pericardium. These collections principally affected the seams or lines of junction of the different lobules of the lungs. Their inner surfaces were smooth, intersected at irregular distances, with imperfect partitions, and, in places, produced into long, polished tubes. Numerous thin whitish collections

of tuberculous matter, arranged in granular masses, over the surface of the right lung. Lungs exhibit an unusual quantity of bronchial mucus when cut.

Left pleura contains a little yellowish serum. A few of the same tuberculous infiltrations. Lungs otherwise similar.

Pericardium. About half an ounce of yellowish, flaky serum in the cavity. Otherwise natural.

Thymus gland and some adjacent *lymphatic glands*, hardened, nearly as hard as cartilage in some places. Whitish matter in some of the lymphatic glands. It appeared that the trachea, about its bifurcation, was pressed upon by the tumour.

Trachea. Lining membrane, of a high, vascular redness.

Abdomen. Cavity contains about an ounce of greenish serum.

Liver. Not thought to be larger than belongs to the age of the subject (two years). Natural. Gall bladder full.

Stomach natural. (Carefully examined).

Intestines. Small intestines examined in various places. No unnatural appearance detected, but a very considerable quantity of bile.

Large intestines extremely contracted. Sides in contact, except the cœcum, which was of its natural size. Mucous membrane not at all reddened or ulcerated. Bile copious. Examined in the same way as the small intestines.

Head not examined.

One of the principal inferences to be drawn from this case, relates to the fact of the occasional occurrence of asthma, from this as well other causes, in young children. The cases described by Dr Parrish, under the name of a peculiar catarrhal complaint in young children, in the first volume of this Journal, p. 24, appear to me to partake strongly of the characters of asthma. It would also appear that the distention and rupture of the air vessels of the lungs were produced in the same manner in this as in the last instance; to wit, by the violent efforts to cough which resulted from the bronchitis, and its cause, or consequence, the pressure of the tumour on the trachea.

At the same time, the arrangement of the effused air, viz. in large masses, principally along the junction of the different lobes, is different from that in the preceding case, in which the gaseous collections were smaller, and irregularly dispersed along the surface of the viscus. This difference probably arose from the difference in density and closeness of texture between the infant and the adult.

Whether, in this instance, the production of the tumour was previous or subsequent to the bronchitis, is what cannot with certainty be ascertained, from the circumstance of the little patient not having been attended by a physician. I should, however, incline to the presumption that the mucous irritation was primary, and the other sympathetic. I base this upon the great frequency of the former, and the aptitude of ganglionic induration to be produced by previously existing disease.

This case may also serve as an example of the extravagant length to which are capable of being extended the popular prejudices about *worms*. The child had diarrhœa and picking at the nose; and, in consequence, we find such a distinct case of pulmonary disease referred to the improbable cause just assigned; an opinion which might have been strengthened, if, as is often the case among children in every state of health, worms had really been encountered.

ARTICLE VI.—*Case of Paralysis occurring in a Child, and attended with Anomalous Symptoms. By* J. MARSHALL PAUL, M.D. *of Philadelphia.*

An anomalous form of disease occurred in a little girl at the age of three years, and continued to affect her in a greater or less degree until her death, which took place unexpectedly four months ago, when in her sixth year, at the time she was recovering from an attack of measles.

It first exhibited itself by a complete loss of power over the muscles of the back and inferior extremities, as she was riding in a carriage with her parents, on their way to the city; and she remained in this condition for at least half an hour, during which time I saw her. She was bled several ounces from the arm; took castor oil to open the bowels as they were costive; had frictions of different kinds applied to the spine and limbs, and in a very short time (say one hour from the period she was seized) she had so far recovered her usual power over the affected parts, as to be able to walk about the room without assistance. This temporary affection returned the following morning, and continued to do so for several

successive days. It was now more particularly confined to the right limb, and was relieved by the same remedies, with the exception of the bleeding, which did not appear to be indicated by the pulse. An interval of several weeks then elapsed, during which time the child enjoyed excellent health, participating in various amusements with her sisters, and exhibiting no symptom of disease whatever. At the end of this time, a recurrence of the paroxysms took place, affecting her in a similar manner and for the same length of time as in the first instance, and they then ceased, leaving her in the possession of apparent health. Thus she continued to be attacked at intervals more or less distant, though with great abatement in the violence of the disease, until the period of her death, without exhibiting any marked symptoms of a cerebral affection, if we except a slight twitching of the muscles of the eyes and face of momentary duration, on one or two occasions, and a disposition to sleep, which was generally indulged, soon after the termination of each paroxysm. It is proper to state, that there was evidently a predisposition to epilepsy in this child, accompanied by a scrofulous diathesis; as evinced by her whole appearance, and by great irritability of the nervous system. She was never able to articulate words distinctly, as all of them uttered by her were gutturals, and difficult to be understood by persons not accustomed to her manner of expressing her ideas.

She was of a very costive habit. Her appetite was generally good, and at times voracious. She had been much indulged in every variety of food, and this in large quantities. Her abdomen was mostly hard and distended; and the discharges procured by medicine from her bowels were always, at the periods of an attack, extremely vitiated and offensive.

The course of practice instituted, was a total change in the child's regimen, confining her entirely to a mild vegetable and milk diet, and in moderate quantity. Gentle cathartics were frequently administered with a view to correct the state of the bowels. Frictions to the spine and extremities were employed; also the salt bath; and for a time a discharge was kept up from the back of the neck by means of a perpetual blister. The chief dependence, however, was placed on the laxatives; as the alimentary canal was considered to be the primary seat of the affection, although some of her symptoms might be suspected to be of cerebral origin: and so far as experience went in this case, there was no reason to regret the course

pursued; as the attacks diminished both in frequency and force, and the disease appeared almost subdued by these remedies. Indeed, we felt strongly encouraged to indulge the hope of the patient's ultimate recovery; as the affection had become so slight towards the latter period of her life as scarcely to attract attention, or cause a momentary inconvenience to herself.

It is worthy of particular observation, and of great interest to know, under all the circumstances of this case, that the child had always been remarkably exempt from colic and other bowel affections; for it proves that extensive disease, or unnatural alteration of structure, may exist in the intestines without being indicated by any one symptom, or readily suspected by the physician. About the beginning of the present year, she took the measles, had them mildly and bid fair to recover; when on the morning of the day on which the last of the eruption disappeared, she was, according to her mother's account, seized with a fit, which on inquiry did not answer to the description of a convulsion. The child appeared greatly distressed, applied her hands to the stomach, screamed, and immediately became rigid in her limbs and body. By the time the neighbouring physician saw her, it had passed over, and she was as well as usual. Some medicines were directed and he went away. Three or four hours afterwards, the fit returned with greater violence, and left her in a state of stupor and insensibility until her death, which took place about twelve hours afterwards.

An examination was made by Dr J. Rodman Paul and myself, thirty-six hours after death. The brain presented no morbid appearance whatever: it was natural in size and texture, and uncommonly free from that turgescence of bloodvessels which is to be met with in most subjects. No effusion of any kind, either in the ventricles or between the membranes. No deviation from the natural appearance to be observed in the medulla oblongata. Stomach of the usual size, and its mucous coat healthy, except two or three small injected spots near the cardiac orifice. Liver, spleen, pancreas, and kidneys natural. In the small intestines we discovered four distinct intus-susceptions, each to the extent of four or five inches. The 1st was found at the distance of twenty-eight inches from the pylorus; the 2d, fifteen inches from the first; the 3d, about six inches further on; and the 4th occurred eight inches from the 3d—all bearing a striking resemblance to each other. The intus-suscepted parts were much thickened, and the calibre of the

tube was considerably diminished. The muscular coat of the intestine was developed in a remarkable degree just at the contracted portions; as if nature had endeavoured to overcome the obstruction by giving it additional power. Every thing indicated that the disease was not of recent origin, but was probably coeval with the first appearance of her singular attacks; as we were struck with the unusual thinness of the parietes of the bowel above each intussusception. The mesentery was studded with enlarged glands of the size of a split pea. No other morbid alteration was observed.

I am perfectly aware that the state of the bowels, as above described, is sometimes attributed to the free use of drastic purgatives, but in this case, there is not sufficient ground for adopting such an explanation, as the medicines employed were mostly of a mild nature, and acted gently without producing pain or inconvenience.

ARTICLE VII.—*An Essay on the Affections supposed to result from the Bites of Animals, and known by the appellation of Hydrophobia. By* J. C. ROUSSEAU, M.D. *Member of several learned Societies.*

[Read before the Philadelphia Medical Society, March 14, 1829.]

"*Je n'ai peur de rien plus que de la peur.*"—RABELAIS.

It is unquestionably a most gratifying circumstance, at which every philanthropic mind cannot but rejoice, to perceive, in the present era of science, the sway of erroneous opinions and prejudices fast yielding to the influence of strict, fair, and impartial investigation. But the romantic and wonderful, particularly when swelled with fabulous incidents, terrific relations, and descriptions of awful scenes, impart such a stimulus to the human mind, that truth, in its simplicity under natural colours, can scarcely promise to create an adequate excitement: for it is a well known truth, that it is much easier to awe than to persuade; and experience teaches us that fear holds the sceptre over all nature.

Instead of endeavouring to diminish the catalogue of human miseries, which has been and is daily swelled to an alarming degree,

every one elbows forward through the crowd of innumerable writers, to throw in his mite, not only to enlarge the collection, but to render it more appalling.

These reflections, I feel convinced, cannot be better applied than to the subject of the present essay; and I propose to give to it that serious attention which its importance merits. But if I am led to deviate from that gravity, which, from the predisposition of every one's mind in matters so unquestionably revered, I presume is anticipated, I hope my disquisition may be taken in its true sense and light, and from the whole, a judgment formed upon the whole.

Than hydrophobia, no other disease, if, perhaps, we except the venereal, has favoured the origin of more fabulous reports, and created more terror in the mind, not only of the vulgar, but of the best informed classes of society, from which I cannot even exclude the faculty; and, yet, without any solid foundation: for I may confidently assert, that there is not one in a thousand that has ever taken the trouble to think seriously upon this subject, and, not unlikely, even a smaller proportion that ever had the opportunity of witnessing the effects resulting from the bites of animals.

The whole of this matter rests, either upon vague reports, preconceived opinions, mistaken notions, or a blind deference to authority.

But after an impartial and unprejudiced inquiry, and a judicious examination of the accounts we have on record, it will be found that they are not only inconsistent, incorrect, and perplexing, but, not unfrequently, shamefully exaggerated; and, in many instances, so visionary, that no reliance can be placed on them. We are, indeed, induced to believe that few of the writers have witnessed with a placid eye the scenes they describe. Moreover, their sanative methods are so versatile and incoherent, their remedies so terrific at times, so insignificant at others, that we might well question if many of them had seen a single case of canine madness.

Nevertheless an inconceivable bigotry of opinion, equal to party spirit obstinacy, pervades all classes, and presents insurmountable obstacles to the admission of the most evident facts, if they appear to militate against long established prejudices, and sanctioned medical creeds.

An impartial inquiry is not only hazardous but scarcely attainable. Regardless of communicating useful information, or affording the balm of consolation, every report is calculated to perpetuate the prolific seed of terror; and it is a lamentable truth, that we are, at

this day, as much in the dark as our predecessors respecting the cause and true nature of hydrophobia. Why this name should have been exclusively selected to qualify a specific disease, supposed to result from the bite of a mad dog, is not very obvious; the dread of liquids being a symptom occurring in many diseases, where a morbid excitement of the nervous system is predominant, and attended with constriction of the fauces.

But it is not an easy matter to divest the human mind of prejudices once inculcated and rooted in by time, and affording an inexhaustible source of romancing. In this, however, we can see nothing more surprising than in the popular frenzy to run, not unfrequently, at the peril of life and limb, to see a fellow mortal launched into eternity.

Having, however, seen cases, not resulting from a bite, in which hydrophobia was one of the predominant symptoms; which observation is sufficiently confirmed by the testimony of others; it may not appear presumptuous in me, unbiassed by popular prejudices, which, although sanctioned by men of respectable authority, are not of a nature calculated to carry conviction,—to unfurl the standard of scepticism that others have hoisted before me.

Truth cannot be elicited by conjectures; facts are not to be established, still less supported, by vague reports; nor reason and judgment satisfied with good or bad names, contradictory declarations, and incredible stories. Admitting without discrimination, and propagating without examination, have been the sources of all the errors that have brought thousands to a premature end.

Disease is invariably a derangement in the constitution; but various agents being the cause of apparently the same disturbance, and the same cause being productive of different aberrations, the utmost circumspection ought to be used in pronouncing upon the origin of diseases. Sex, temperament, constitution, habits, situation, occupation, seasons, former diseases, perturbation of mind, &c. &c. must, necessarily, vary the symptoms of the same disease, and become the cause of the diversity or identity of the morbid appearances, that have not unfrequently drawn the faculty into error.

That bites, more commonly of dogs, because of their greater number, their particular habits and their dwelling among men, have in numerous instances proved fatal, cannot be denied; but that those accidents have resulted from a disease, inoculated by a specific virus generated in the mouth of the animal, under a particular morbid

excitement, is merely a supposition, rather disproved than supported by facts, as we hope to be able to prove as we advance in our inquiry.

Dogs being, in general, possessed of an uncommonly irascible temper, and naturally prone to bite, and some species being extremely ferocious, it is not at all surprising that a general dread of them should be imbibed in infancy, and retained in maturer years; and this circumstance must incalculably aggravate the consequences of a bite, and may be productive of those very accidents that have been attributed to a specific virus.

The fact is daily confirmed by experience, that lacerated wounds are oftener than any other attended with danger; and if we pay particular attention to those resulting from bites, we shall find that, of all the injuries of that kind, they are the worst, from the compound action, producing not only laceration, but contusion. Moreover, if with these peculiarities we take into account the state of perturbation created in weak and prejudiced minds, by unexpected attacks of infuriated dogs, we cannot but hesitate to sanction the idea of a rabid poison secreted in the mouth of the animal under a particular state of disease. Besides, it cannot be questioned, that the saliva and teeth of a dog in perfect health may, from the putrid and filthy substances on which the animal not unfrequently feeds, acquire and harbour a decided virulence, and become the source of the accidents, that have for so long a time disturbed the peace of mankind.

All the well substantiated facts, indeed all the anomalies characterizing the maladies supervening on bites of animals supposed to be in a rabid condition, concur to prove, that the same symptoms have resulted from the bites of animals labouring under no kind of disease, as well as from various injuries, not admitting the possibility of any introduction of virus, being the consequence of the mere mechanical agency of inanimate bodies.

I am fully convinced, and many sound observers will I think join me in the belief, that the terror propagated, from generation to generation, by the popular tales on hydrophobia, has been the cause of more mischief than the pretended rabid poison itself, and that more than a few have become mad from the simple fear of turning mad.

I perfectly well recollect the son of a gentleman with whom I was intimate, who, to the age of twelve and upwards, could not see

the approach of a dog without being thrown into a fit; and it was not without much trouble, that, by keeping a dog in the house, his antipathy was at last conquered.

"Will it bite," is a common question with children, when a little dog or any other pet animal is given to them; not that they have been bitten, but because they have been scared with it by their nurses, parents, playmates, &c. Of all the scare-crows resorted to, to intimidate children and force them to obedience, the dog is the most common, and the stories of canine madness always come very *à propos*.

Yet dogs are not sufficient to frighten all children. Some are very mischievous, and like to plague cats. "The cat will scratch you," is then the cry. Still this will not do; children are not afraid of scratches. With a little more trouble, and out of necessity, the disease of madness has been stamped upon cats; and all the old, and many new, wonderful stories have been heaped together to swell the collection. But cats will not generally bite; then "madness can be, and must be, and has been communicated by scratches." This is hard to believe, and, therefore, it must be proven. "Cats lick their paws," as every one knows; and as it is the saliva of dogs that transmits the rabid poison, it must proceed from the like source in cats. Accordingly, "by licking their paws the saliva is deposited on them;" *ergo*, "scratches can inoculate madness!"

The above reasoning may answer tolerably well for children; but we cannot help blushing to find such stuff recorded by men in their proper senses. Yet, as such reasoning may be specious for some, who, like the *bonus Homerus*, *aliquando dormitant*, we hope to be excused if we take some notice of it.

Animals in general, and particularly cats, that are remarkable for an uncommon degree of cleanliness, are not very attentive to this characteristic quality, while suffering from disease. On the contrary, their filthiness is the first apparent symptom of their diseased state; and this arises from the circumstance, that they do not lick their paws. For it is not to be supposed that the animals adopt this employment as a mere pastime; on the contrary, it is for the sole purpose of removing the dirt that they have, *with their paws*, brushed from their heads.

Since I have been led to speak of the ridicule that ought to be cast on the popular tales, related at random concerning canine madness, (and I am fully persuaded that too much cannot be done to

doom them to a state of oblivion), I beg to be indulged in prosecuting this task a little further, not for the sole pleasure of exposing error, but with the hope of fostering the spirit of investigation which I imbibed at an early period of my medical career.

Palmarius, an ancient writer, seriously informs us, that the straw, on which some mad swine lay, communicated the same disease; and, *risum teneatis*, that a man who had become mad from the bite of a rabid dog, when on the point of death, kissed his children, who, in a few days, were all seized with rabies, and died of it!!

So much for plain truth—then comes the romantic; such as men tearing and eating their own flesh; biting like dogs; or scratching like cats, when the disease proceeded from the last. Others, quite composed, warn their friends not to come near, for fear they should bite them, and view, composedly, their appalling situation!

We shall now cite from writers how long a time will be requisite to establish this incongruity of symptoms.

From Lomnius we learn, that seven years may elapse before the invasion of the disease.

Morgagni relates a case, in which twenty years elapsed between the bite and the appearance of the disease.

Boerhaave mentions a case of the same description.

I have read of a case spun out to forty years.

Other writers, however, fix the invasion of the disease at a very short period after the bite.

Dr Gray records a case in the West Indies, in which death happened on the same day as the bite. We might even go further, but, for the sake of common sense, must refrain.

After all the uproar created by this terrific malady, it might be supposed that no doubt could be entertained as to its existence; but, alas, of all the symptoms that have been recorded, not a single one can be called pathognomonic. Neither does any identity of symptoms characterize the disease in men and dogs. We have already repeated the idle stories transmitted to us by ancient writers upon canine madness, as communicated to the human constitution; for this disease has never been supposed to be spontaneously generated in man.

We shall now narrate the general symptoms observed in dogs: they look dull and stupid.

They pant, keep their mouths open, hang out their tongue, and discharge abundance of saliva. They refuse food. They are thirsty, and do not drink.

They look dirty. Their ears and tails hang down. Some say they move slowly, others that they run faster than ordinary, and in an irregular manner.

It is nevertheless an accredited popular opinion in some places, that they always go straight forward; and if you get out of their way, they will not hurt you; yet various writers assert that they snap at and bite every thing they meet with.

We find nothing but contradictions at every step of our inquiry, as often as the authors have not copied from one another.

The tail between the legs, seems, however, to be the most prominent symptom, and the most noticed in general. It is that, also, which spreads terror and dismay throughout all classes of people; although it be quite insignificant, and nothing more than an indication of fear and timidity, observable in all dogs passing through a strange neighbourhood.

It is, indeed, surprising, that we should have, to this day, been satisfied with such contemptible data; and still more astonishing, that no inquiry has been proposed or encouraged, by premiums or otherwise, to ascertain something respecting such a direful malady, the existence of which must rapidly come to be considered as extremely doubtful, if not entirely imaginary.

What is rabies in animals? What is it in men?

Is it the result of a specific virus of canine origin? Can it be productive of a particular disease, in other animals and in men, by the simple application of the saliva to some living part?

Does the poison exclusively reside in the saliva*? Is inoculation by means of a wounded part absolutely indispensable†?

What is the nature of the wound produced by the bite? Does it secrete a poison of the same nature as that secreted by the salivary glands during the disease?

Is it a compound effect of the laceration of the teeth and the particular quality of the saliva?

May not the saliva of dogs, under some peculiar circumstances, become poisonous without the animal being in a state of disease?

Why are the effects of the bite of a mad dog more promptly shown on animals than on men, as the reports assert them to be?

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* Pliny recommends the saliva of a mad dog for the cure and prevention of hydrophobia.

† Dr VAUGHAN tried to inoculate it without success.

Why is not the dread of water a characteristic symptom of rabies in dogs as well as in men* ?

Until these queries have been satisfactorily answered, we cannot believe that hydrophobia is the result of a specific virus. And if we were to support this opinion, how could we reconcile our belief with a number of well attested facts, proving that this symptom scarcely happens once in thirty cases, where the bite has been inflicted by the same dog.

Hydrophobia, I am persuaded, is an extremely rare disease; and when its occurrence has not been preceded by the bite of a dog, it is met with very little apprehension.

I have experienced it myself, after my recovery from a long illness, that had thrown me into such a state of morbid sensibility, that, not only water, but any thing else that could produce a tremulous motion on my eyes, or a shrill sudden sound on my ears, excited the most horrible sensations.

I have witnessed it in many cases of cynanche, and in diseases of infants of various kinds.

The disease was strongly marked in a case of destruction of the epiglottis that fell under my care some years ago; until I contrived to introduce liquids into the stomach, by means of a piece of intestine of a chicken, swallowed at one end, while the other was kept fastened to one of the teeth of the patient, who was delighted to receive, as often as he was desirous, by means of the canula of an injection pipe, the liquids that were forced through it.

It is not, I am now convinced, a terror resulting from the sight of water or of other liquids that harasses the sufferers. It is, as many have confessed, the dread of having the liquids forced upon them, when they feel certain from former trials of their inability to swallow, and call to mind the sufferings they have undergone by their exertions to accomplish an act that they were rather desirous than reluctant to perform.

This inability to swallow liquids generally proceeds from a constriction of the fauces; or from a too exalted state of irritability in the organs of deglutition; or from a rigidity of the epiglottis preventing the shutting of the trachea, in consequence of which the passage of liquids into that tube, on their way to the œsophagus, occurs.

I have ascertained these facts by introducing my forefinger into

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* A number of writers on this disease, are of the opinion that it is not.

the fauces of the patient; and Dr WILLIAM SHAW, an experienced and respectable physician of this city, has informed me of a case that fell under his care, in which the rigidity of the epiglottis was so great, that he could not press it down with his finger. The patient, who died with all the terror that the presence of liquids could excite in the mind in hydrophobia, repeatedly assured him, that his fear was excited solely by the recollection of the agonizing fits of coughing, he had been thrown into by his first attempt to swallow some water; and that he would rather give up his life, than run the risk of being again thrown into the same predicament.

If the popular terror, generally entertained concerning hydrophobia, could only be once mitigated, and all the cases observed with coolness and an unprepossessed mind; we cannot doubt that they could all be traced to natural accidents and ordinary causes. But those are extremely few who are so zealous as to be willing to embrace the few opportunities which are offered, to forward this end.

Persuaded, for my own part, that the seed of truth is as easily sown as that of error, I have not neglected the undertaking; though, conscious from experience, that, in such a work, much of the labour is generally lost. Nevertheless, it is consoling to reflect that the value of the harvest may compensate for its scarcity.

I shall relate a few cases of those that I have closely observed, neglecting nothing, and sparing no pains, necessary to a complete history of them. They will, I expect, corroborate the opinions that I have supported in this inquiry.

The following must be fresh in the memory of several of our members; and the noise it made in the newspapers of this country, is hardly yet entirely subsided.

I. About the latter end of June 1819, three respectable physicians of this city were attending a lady of Southwark, and, after her death, reported her case as *hydrophobia*.

On the 3d of July following, I was called to visit a young lady, eldest daughter of Joseph Barry, captain of the packet ship Telegraph, of this port, also residing in Southwark. She had been severely bitten, on the leg, by the same dog that had caused the death of Miss F. above alluded to.

One of the three physicians who had attended Miss F. during her illness, had, I was informed by Mrs Barry, been consulted on the case of her daughter, and advised the excision of the wounded part. But as I had been the physician of the family for a number of

years, she thought proper to postpone the operation, until she could have my opinion.

The popular excitement was high and general, particularly in the neighbourhood; and the reports were so various that one could not be too cautious in accrediting them.

I thought it advisable, having already learned from the reports of a number of persons I met on my way, not to act with too much precipitancy, and went out to collect more information.

I discovered that a little boy residing in the same family with Miss F. who had also been bitten by the same dog, was exhibiting no sign of illness, and that his wound was healing kindly.

I learned from him, as well as from the many idle stories of others, that the culprit was a little slut belonging to Mr Kane, a tobacconist, residing at the N. E. corner of Second and Christian streets. I went immediately to see him, and was informed, that he and his daughter had likewise been bitten by the little creature, of which bites they did not entertain the least apprehension; remarking, with a smile, that she was excusable; for, added he, "she was in a situation that too frequently turns men and women raving mad, and, therefore, I wished her no harm. But the panic was so great among the neighbours, as she had bitten many more men and dogs, that to please them, my daughter (neither of us having the heart to kill the poor animal) carried her, in her apron, to some man, who took her with one hand, and chopped off her head with the other."

After this, I thought all safe enough in sparing the flesh of the young girl; and for the purpose of calming the public, I immediately published a fair exposition of the facts in Relf's gazette.

Ten years nearly have elapsed since this alarming occurrence; but neither men nor animals that had been bitten by that pretended mad dog have yet shown any sign of derangement.

It is, however, not amiss to show, that obstinacy can always find some rampart against the attacks of truth. It will, I fear, hardly be believed that on my relating the above and other facts, I was told that by killing the dog, the disease is prevented in those that have been bitten! For the same reason, I presume, that, formerly, to cure a wound, the sword, that had inflicted it, was anointed, dressed and nursed!

II. A male child, about five years of age, was seized with melancholy, attended with a drooping countenance, loss of appetite, glaring eyes, and tremor of the limbs. Early in the morning of the next

day he became very restless, and in a short time so much agitated, that he could not be kept in bed. He refused medicines and drinks, and slabbered considerably, talking incoherently and wildly about cats.

The cat of the house was looked for, but could not be found. Information was received from the children of the family, that the animal had run away in a fit.

Madness was immediately the cry. Two of the most accredited physicians were sent for, who pronounced the disease an evident case of *hydrophobia*.

I was a friend of the family, and, happening to pay a visit at that time, was asked to examine the child. He was in a state of extreme agitation, with all the symptoms I have already related. A sweat was running from his face and breast; a violent spasm was remarkable in the muscles of his neck and throat. He protruded his tongue as if craving something, and exhibited all the symptoms of the greatest agony. I had not yet retired, when the attending physicians returned. They tried to make him swallow some drops; but he raised his hands against the cup, with a roaring noise in his throat, and, apparently, with great anger and terror.

Unable to find any mark of a bite or scratch on the child, I took the liberty to observe, that, in the absence of any lesion, the infection from a rabid virus appeared, at least, doubtful. But the physicians were both of a contrary opinion, alleging that rabies could be contracted in various ways; that numerous cases were on record, by which it was satisfactorily proved, that the mere breath of a rabid animal could communicate the disease. As they were both senior to myself by many years, I bowed respectfully; but before I left the room I asked the liberty of putting my finger into the mouth of the child, to ascertain the state of the fauces, which I found extremely contracted. This was assented to by the gentlemen, who, I dare say, viewed this act as an indication of rashness. Death took place the following day, or soon after, for I now relate from memory. I was informed of it, and proposed an examination of the body, which was assented to.

A quantity of flowers of the belladonna were found in the stomach, which, as well as the œsophagus and fauces, was in a state of great turgescence and inflammation. So much for rabies in this case.

III. In the year 1805, a seafaring man, apparently in great dis-

tress, called on me for relief. He had, some years previously, been bitten by a dog, and exhibited the mark of the wound on his leg. His sensations were, he said, such as he never felt before. Every thing made him peevish and ill-natured: he could not content himself any where, nor could he rest, eat, or drink. His ship-mates were constantly teasing him about his turning mad; telling him that he would be smothered between two mattrasses or shot, and plaguing him with the usual stories connected with such cases.

It was not long before he was really taken sick, and I was requested to visit him.

I found him labouring under a most violent attack of tetanus: his looks were so wild that no one dared to come near him. No information could I obtain from him, and no one could be persuaded to take care of him; so great was the panic created by the superstitious stories related with reference to his case.

Having after much trouble convinced some of the by-standers that he could not bite on account of his teeth being violently clenched together, they assisted me in applying large blisters upon all the parts we could get access to. Then, taking advantage of a vacancy between his teeth, I endeavoured to throw in some liquids; but he returned them with violence and anger. Enemas were next resorted to.

No doubt was entertained by those who visited him that his case was hydrophobia from the bite he had received some years before.

On the third day of my attendance, the large doses of opium suspended in water, which he had taken by injection, had already relaxed the system. I was then informed by one of his attendants that a large swelling, attended with great redness, was observable on his right wrist, and that they had learned from one of his visiters, that, six months before, he had a very sore hand. I examined the part and found that some foreign body could be felt in the wrist, between the tendons. The former wound being completely cicatrized, I laid it open, and found a splinter of wood more than two inches in length, and three-eighths of an inch thick. The tetanic symptoms continued however for some time; but the continuance of large doses of opium, amounting sometimes to the quantity of thirty-six grains in twenty-four hours, produced at last a relaxation.

Had death, in this instance, taken place without the discovery of the cause of the disease, it would have been considered as an indubitable case of rabies.

Such was the dread left on the mind of this patient, that, on my meeting him some years after in the street, and speaking of his past illness, he was seized with a general tremor, and angrily declared that he believed that if I spoke again of his disease, he would be thrown again into a fit of locked jaw!

IV. William Wildey, upwards of eight years ago, had been bitten on the middle finger of the left hand by a dog that, after having bitten several dogs in the country about Bristol, had been pursued and killed as a mad dog. All his friends advised him to have his finger amputated, and he applied to me to perform the operation. All my representations to the contrary produced very little effect to make him alter his determination. Having, however, ascertained that he was not willing to trust any one else to perform the operation, I persuaded him to wait. Fear had already created symptoms of an impending hydrophobia. He felt a constriction of the fauces, and experienced some difficulty in swallowing his saliva. I persuaded him, at last, that his indisposition was owing to fatigue and uneasiness of mind, dressed his finger, and supplied him with some opiates, and thus saved him from madness and the loss of his limb.

It is not to be doubted that the cure would have been more ostentatious and more admired, if I had unfeelingly lopped off the finger of the poor fellow.

Cases are not wanting to prove that an excited imagination without any other cause, has, in instances, developed all the symptoms of hydrophobia. One of this kind may be found in the Journal de Medecine of Paris, 1814. Kindness, attention, and proper consolation restored the patient, a young student of medicine, to his reason and to health. Another case is to be found in the Annales Littéraires Med. Etr. 1811. The patient died with all the symptoms of canine madness, from the bite of a cat that was not even suspected of being rabid. Pinel relates a case of death, with all the symptoms of the most evident hydrophobia, from the bite of a horse, that, neither at that time nor at any subsequent period, showed any sign of disease.

Hydrophobia is not uncommon in hysteria. The abuse of mercury has, not unfrequently, been the cause of it.

I have not, I hope, led any one to suppose that hydrophobia cannot result from the bite of dogs. My arguments are simply intended to combat the erroneous idea of a rabid virus, and to allay the terror generally entertained of mad dogs. For, if I do not believe the

accidents that have been witnessed to be the result of a specific venom, I have powerful reasons to acknowledge, that the bite of dogs, either sick or well, is not unfrequently attended with extreme danger, and ought to be avoided with the utmost caution.

What I have occasion to wonder at, is, that human genius, as if it were not satisfied with all the evils and calamities thrown in our way and daily threatening our existence, should have fancied and contrived additional imaginary ones. Partiality for mysterious causes and effects is one of the most prominent characteristics of the human mind.

The rabid poison is not the sole imaginary bane of human invention; and no great effort of mind is requisite to understand why it, and syphilis, and witches, and vampires, and loup-garons, and syrens, and ghosts, &c. &c. have, so long, been reverently accredited. Every one has some business to do. *Tot mala, tot antidota.*

I have known people, and I have given it as my opinion, to entertain no apprehension from eating the flesh of a pig or a cow that had been bitten by a *soi-disant* mad dog. Experience has repeatedly confirmed the correctness of this opinion.

Dogs are undoubtedly liable to disease; and maladies are sometimes epidemical among them, as well as among cats. But, have their diseases been studied, and do we possess sufficient data to pronounce upon their particular character? As soon as a dog shows some sign of indisposition, with a morose and dejected countenance, instead of looking for the cause of his disease, he is kicked and turned out. Does he wander out of his habitual places, and, through fear or timidity, walk with a drooping tail, he is taken for a mad dog; and, if he happen to be attacked by other dogs, and attempt to bite in his own defence, ten chances to one if he is not put to death without mercy or further inquiry.

What I have seen of dogs under a state of disease, inclines me to think, that they, then, rather lose their natural temper for watchfulness and ferocity. They lie down and secrete themselves if they can, and, unless it be in their own defence, seldom bite; and if they resort to that extremity, their bites do not appear to be, then, more dangerous than at any other time.

During the panic excited in this city by the report of the death of Miss F. of Southwark, I had, in my family, a sick dog that exhibited more of the symptoms of madness than any I had seen killed for this supposed malady. He was a favourite with all my

children: they nursed him, and through the care and attention paid to the animal, he recovered, and is still alive*.

That a sick dog, or any other animal, should show an aversion for food and drink, is a circumstance consonant with the laws of the animal economy, and cannot be characteristic of any particular disease.

It is not without extreme pleasure we observe, that the reports of cases of hydrophobia from the bites of animals are neither so numerous nor so fabulous as formerly. This cannot, we may reasonably suppose, be attributable to any other cause than to a more extensive dissemination of knowledge; creating, in our population, a greater degree of fortitude, and enabling every one to compare and judge with less prejudice.

We confidently anticipate the time, when, by the exertions and investigations of unprejudiced men, all the fabulous stories respecting canine madness will either be entirely forgotten, or treated with derision and contempt, and the diseases resulting from bites viewed and treated, like all the tetanic affections from general causes; attributing the variety and intensity of their symptoms, to the diversity in constitution and habits of body, the higher degree of irritability of the subject, the greater degree of sensibility of the wounded parts, the extent of the injury,—in a few words, to the multiplicity of incidents resulting from circumstances, and the influence of unaccountable and unknown causes, to which organized bodies are unavoidably exposed.

Having endeavoured to place hydrophobia in its proper light, I shall now devote some time to the examination of the various modes of prevention and cure, proposed and put in practice at different periods, and those now recommended by prudence.

Whether hydrophobia be the result of a specific virus or not, it is, under every shape, one of the most formidable diseases that we have to encounter; and the dread of it being one of its prominent features, our attention should be directed not only to the disease, but to every thing else that may, from prejudice or otherwise, have a deleterious tendency. This is, certainly, not the easiest part of the task.

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* Dr WILLIAM SHAW, spoken of before, has seen many cases of the kind, and the bites have never proved more dangerous than under other circumstances.

As the belief has been, and is yet unshaken, that this disease is of canine origin, quackery, favoured by popular opinion, has spared no pains to circulate a vast number of nostrums for preventing dogs from being affected by this disease, under the persuasion, that, if dogs were safe, men had nothing to fear.

The application to the forehead, of a red hot iron, of different forms, according to the superstitious notions of different countries, has been, and is yet, thought of indubitable efficacy; chiefly among the peasantry and the lower classes. Cutting the tip end of the tail, and pulling something out of it, some have great faith in, as well as in amulets tied round the neck.

PLINY recommends hen's dung; JAMES, turbith mineral; others, antimony. Indeed any thing may be recommended; for, as I have remarked, the uncertainty of the existence of this disease, may support the credit of the most insignificant nostrums, on account of the impossibility of detecting the imposition.

The worming of dogs, or extracting something from under the tongue, nobody knows what, although recommended at the time of PLINY, is supposed by some to be a modern discovery. The rationale of this operation has never been given, nor does it appear very evident.

Muzzling the dogs appears, in our city, as a dernier resort for insuring the safety, or calming the apprehensions of the community. A great deal is thought of it, particularly by those, who, from various motives, justly deprecated the barbarous law for killing our dogs.

Against this expedient, at least as good for the people and better for the animals, I should be reluctant to raise any objection, as long as our dogs are not better muzzled than we see them at present. The principal object being to quiet unfounded fears, it does not matter how this is obtained; if the means are humane, and not shocking to our feelings.

But if the muzzle were put on tight enough to prevent dogs from biting, it would likewise prevent them from drinking, and obstruct the passage of the saliva, which, when the creatures are heated, runs abundantly from their mouths.

In times of epidemics, prudence requires that dogs should be confined. Their food and drink ought to be carefully regulated and changed; and when they are kept in kennels, the utmost degree of cleanliness is to be observed; fumigation being used, as well as

white washing, and scrubbing with lime-water. Their litter should be made with dry and, if possible, nearly scorched straw: for vegetable putrefaction is, more than any other, the source of malignant diseases.

They ought to be often led through running water, and kept in it as long as possible.

Superstition has gone so far as to make some believe, that they may be secured against the bite of mad dogs, by wearing certain amulets. Finger rings are publicly sold in the streets of the cities of Europe, under the name of *Bague de St Hubert;* with the assurance that, as long as they are worn, no danger is to be apprehended from them. It may be as good a talisman as the horse shoe, the snake stones, quarantines, &c. &c.: they all keep the human mind in a state of placid tranquillity, do no harm, and give employment to many.

I cannot take leave of this subject, without taking a cursory view of the therapeutic means now in our possession.

We have advanced but little further in our curative than in our preventive means. From our predecessors, except the excision and cauterisation of the wounded parts, we derive but little knowledge for the cure of hydrophobia. Their remedial means were, as we have already said, either insignificant or terrific.

The practice of plunging and keeping the patient under water, until he was exhausted and nearly drowned, was followed for a long time; but few, if any, received real benefit from it.

Opinions are very much divided concerning the course to be pursued in the cure of tetanic diseases, of which we may consider hydrophobia as merely one of the symptoms, marking an exalted state of the affection.

It is extremely difficult to trace a general route; for, in some cases, and indeed not very unfrequently, the phases of disease succeed one another so rapidly, that the remedy indicated at one period, can scarcely be applied at a more advanced stage. Hence the repeated failures of the various remedies boasted of.

If it were possible to see the patient on the invasion of the disease, and practicable to be constantly at his bedside, our success would undoubtedly be greater.

The remedies now held as the most energetic, and which are highly recommended as having been most successful, are mercury and antispasmodics. I have always found opium extremely beneficial, particularly when the administration of it can be safely pushed

to large doses*. The promptitude of its action upon the animal system, entitles it to the highest degree of confidence.

Mercury presents resources not to be found in other remedies, from the variety of forms, and the diversity of ways in which it can be administered. Its introduction has been owing chiefly, I presume, to the gratuitous supposition of a rabid poison introduced into the system; under the expectation that, since it had proved an antidote against the venereal poison, it might, by its power of acting upon the salivary glands, be still more efficacious in hydrophobia (whose cause was supposed to have originated in the mouth of the dog), and by a profuse salivation expel the morbid poison. Thus was one supposition supported by another, and reasoning founded on an analogy that does not exist.

Yet, as it is not absolutely necessary that a remedy should possess a specific power to prove beneficial, no objection can be found to combining mercury with opium; especially when we know, that they have been repeatedly administered together to the great relief of the patient.

The asthenic practice has never been crowned with great success, nor does it seem calculated to promise much good. If it were possible to foresee the intensity of the symptoms before they are established, depletion might, perhaps, guard against them; but too many circumstances forbid such an expectation, and when we are called to see a patient, it is mostly too late to resort to it. Besides, is it possible to reduce the irritability, the sine qua non of life, without sapping the very foundation of its existence, and running the risk of destroying the patient, when our object is to get rid of the disease?

Even admitting the disease to be caused by the presence of a rabid poison, the asthenic method would be found no less hopeless. When poisons have once begun to disorganize the animal frame, the poisonous matter is not the sole object calling for our attention: the means of enabling the organization either to eliminate, or to resist the shock produced by the venom, have, I presume, a much stronger claim to attention.

It is so difficult, and the instances are so rare in which we may be

* I have given it, with success, to the extent of thirty-six grains a day; and Dr W. Shaw assures me, that he has gone as far as forty-eight grains, daily, for several days. Monstrous doses are on record.

enabled to expel or neutralize the poison, that the only resource left to us, is to support and assist the natural powers to combat the enemy. This, I am confident, is the desirable object; to be obtained, rather by increasing than by reducing the *vis naturæ*. Yet as this cannot be effected by abrupt measures, our assistance ought, in all cases, to be judiciously regulated, in consonance with the natural energy of the individual and the urgency of the case. *Hic labor, hoc opus.* Hence good or bad management, in every undertaking, may acquire fame for, or sink into insignificance and oblivion, the same means.

Injections into the veins have lately been the subject of experiments, with no better result that I know of, than the exchanging of one disturbance for another. But few medicaments can, with safety, be introduced into the bloodvessels, and the salutary effects of such a practice are at least doubtful. If it be intended to throw in the medicines and to have them carried, unchanged, into the general circulation, this route is but little better than the natural one; for if the drugs, introduced into the stomach, undergo some change, before they are offered to the acceptance of the lacteals, they, likewise, must suffer a considerable alteration in the lungs, to procure their admittance into the general circulation.

If the intention be to reach at once, and annihilate the morbid poison, the shorter route is undoubtedly through the arteries, where the specific could, more likely, be conveyed without alteration. Such an idea might please and satisfy many, who do not extend their views any further; but, to say the least of it, its practicability is extremely doubtful, and the benefits to be expected from the operation still more questionable.

The *modus operandi* of vast numbers of venomous substances remains yet in the dark; as seldom any vestige of them can be discovered, except by their ravages. Until we have advanced further in this knowledge, we are left to experiment with great uncertainty.

It is not, however, pretended, that judgment and observation cannot dispel the darkness in which we are often left to move. Remedies known to conceal no deleterious influence, may always be tried with safety.

Much of the success expected from the application of remedies, depends upon their timely administration; the knowledge and management of the proper quantities that can be borne by different in-

dividuals; and the continuance requisite to obtain the proper effect. For, it is evidently known, that when the nervous system has been once thrown into a state of disturbance, it becomes extremely difficult to recal it back to its healthy standard, even after the removal of the exciting cause.

Such are my views of this important subject. They are not the result of a few hours' thoughts, but have been suggested by many years of reflexion, and confirmed by repeated, close, and faithful observation.

In this investigation, I have not been influenced by any other motive than that of promoting useful inquiry; to efface, if possible, erroneous impressions, and quiet the unfounded fears respecting canine madness, on the appearance of the slightest symptoms of hydrophobia.

By bringing the human mind to reflect more coolly upon the diseases that have been stamped with terrific names, it will soon be found that they, like others, proceed from the innumerable causes that bring diseases upon the whole creation. Free from terror, our patients will view their situation with more firmness; and, confident in our cares, will expect with resignation the benefit of those means, which experience has taught us to rely on with most confidence.

I may not, in all respects, agree with every one; but I rejoice to find myself supported by a number of medical men, entitled, from their talents and unbiassed minds, to the greatest respect and confidence.

ARTICLE VIII.—*Case of Instrumental Labour, attended by Circumstances of Peculiar Difficulty, in which Embryotomy was performed. By* HENRY NEILL, M.D. *of Philadelphia.*

Ann Fitz-Patrick, aged 26 years, had been delivered of two children, by perforating the head and evacuating its contents. After she was delivered of the second child, she was particularly informed of the impossibility of her having a living child at the full period; and earnestly requested to inform her physician of her pregnancy, should it take place, that means might be adopted to procure deli-

very before the full period. She conveyed this information, but objected to having any means employed to effect premature labour.

On Thursday, the 15th of January 1829, I was sent for early in the morning to attend her in labour; her full time having arrived. On examination, finding the os uteri not dilated, I directed her to be bled, and a dose of laudanum administered. I saw her again in the afternoon; but as very little alteration had taken place, I could not discover the presentation and the anodyne was repeated. The next day, Friday, the os uteri was somewhat dilated; but no satisfactory knowledge could be obtained as to the presentation. On Saturday, I called in consultation Drs JAMES and HEWSON. The dilatation had now taken place sufficiently to enable us to ascertain that it was not a head presentation, but of some soft part. This circumstance was considered greatly to increase the difficulty of delivery; as I could not well imagine how the head could be reached, so as to act on it with the perforator. Her pulse continued very good, and it was concluded to leave her again for another night under the influence of opium. The next day, Sunday, at 12 o'clock, the os uteri having fully dilated, it was judged that it was a breach presentation; and the size of the pelvis was calculated to be about two inches and three quarters from pubis to sacrum. It was now concluded that I should attempt to bring down the feet. On exploring the pelvis, I found the contraction so great on the right side, that I could only introduce my fingers; but by pressing with considerable force up the left side, my left hand passed with difficulty through the superior strait; and by another effort, I grasped one of the feet, but found I could not retract the hand, when closed. After resting a little, I fixed the foot between my fingers, and gradually drew it below the contraction. I then paused, and after a short time, grasping the ancle, drew it through the os externum. This being secured by ligature, I again, after a short interval, introduced my hand, and succeeded in bringing down the other foot. The feet being both brought down, it was concluded to leave her for a few hours.

At 3 o'clock, P.M. the consultation again met, and found her much exhausted, and her pulse very feeble. It was now very evident that she must be delivered very quickly or not at all whilst living. The body of the child occupied the vagina, and, before I made the trial, I did not suppose I could introduce instruments so as to act on the child's head; but contrary to my expectation, I was still able to pass my hand along the sacrum through the upper strait, and got

my finger into the child's mouth. I then introduced the blunt hook and fixed it in that part: this being firmly held by Dr Rodman Paul, prevented the head from moving. I then placed my forefinger behind the ear, and cautiously introduced the perforator, pressing it close to the palm of my hand and along the finger, until it reached the head, which I perforated. The perforator being withdrawn, I introduced the crotchet and fixed it at the base of the skull. Having the head thus secured by the blunt hook and crotchet, I withdrew my hand. Gentle extracting force was now applied: the head was soon evacuated of part of its contents and passed through the upper strait, and the child was immediately delivered.

In the delivery of the placenta, there was not much less difficulty, and perhaps greater distress to the mother. It adhered throughout the whole extent of its surface, and could not be brought away but by introducing the hand and separating the adhesions by the fingers. The uterus then contracted and prevented any unusual hemorrhage. But so great was her prostration, that I was apprehensive she would live but a few hours. Another engagement requiring my attention, I left her under the care of Dr Paul, to whose unremitting assiduities through the night, the preservation of her life may be justly ascribed.

The patient remained in a very low and critical situation for several days, and then gradually recovered. In about a month she was able to walk out and go to market; but an extensive slough has taken place from the urethra and bladder, which I fear will render her very uncomfortable for the remainder of her life.

Article IX.—*Account of a Case in which Portions of Three Dorsal Vertebræ were removed for the relief of Paralysis from Fracture, with partial success. In extracts from a letter to Dr* B. H. Coates. *By* Alban G. Smith, M.D. *of Danville, Kentucky.*

About two years since, I was called a distance of about twelve miles, to a place called Pleasant Hill, the residence of a community of the people commonly called Shakers, to see a young gentleman, a member of the society, who had fallen from a horse, and had become paralysed in all the extremities with the exception of the mus-

cles above the elbow joint. Upon examining the spinous processes of the vertebræ, I found that one of them was thrown to the right side, to the distance of about a quarter of an inch. Concluding that the whole of the vertebra, body and all, was dislocated, I told him that, in all probability, the case would soon terminate fatally; and merely directed some cups to be applied to the parts adjacent, with low diet, and some gentle cathartics. Since then I heard but little of the case, except that he was still alive, until, a few weeks ago, Dr THOMAS, the physician of the society, and his brother came to see me, at the earnest request of the patient, stating his importunities, that if I thought there was a possible chance of relief by any process, I would attempt it; as death was far preferable to his present situation. They informed me, at the same time, that Dr DUDLEY had been called to see the case, had made an incision down to the bone, and had given it as his opinion, that the body of the bone was not dislocated, but that one side of the base of the spinous process was broken and pressed in on the spinal marrow. Having implicit confidence in an opinion emanating from such a justly distinguished surgeon, I told them that I would come down, and if upon examination of the case, the state of his general health appeared to admit of any probability of its success, I would attempt to remove the pressure. Accordingly, in a few days, I went down; and, after I had represented to him the few chances of success, the difficulties of removing a part so tied down without fatal injury to the spinal marrow, and also the probability of the injury sustained by the spinal marrow itself being so extensive that the powers of nature might not be sufficient to resuscitate it, he replied that, if there was one chance in a thousand of its being of any kind of advantage to him, he wanted the attempt to be made. After sending for my friend, the accurate anatomist, Dr H. MILLER, who concurred with me as to the propriety of the operation, I proceeded. I made an incision, about five or six inches in length, along the spinal ridge, and then two deep incisions, transversely to, and at each extremity of the former, and three inches and a quarter in length, all down to the bone. I then dissected all the muscles and ligaments as far as the heads of the transverse processes, and scraped the bone clean. The situation of the parts was found as Dr DUDLEY had described them; the fragments being pressed to one side, but so completely united, and so smooth on the upper surface that the line of separation was not very well marked. I next took a small Hey's saw, and made an incision

on both sides, as near the base of the transverse processes as I could, as deep as I could with safety to the spinal marrow and the nerves going off at the sides, and long enough to cut through the bone above, about half way, which was the third dorsal vertebra. I then sawed off the end of the transverse process of the second, and into the transverse process of the third, about half its base. Then, taking a very strong tooth forceps, with its ends turned on one side, and getting a claw in each incision made by the saw, I was enabled to break up the external plate, and part of the internal; so that I could now, with a small strong pair of pliers or forceps, break, by a small piece at a time, the whole of the bone that I had cut round with the saw. Here the anatomist will see the difficulties with which I had to contend; as the parts are so firmly and securely tied down with ligaments. Thus it will be seen that I took out a part of the spinous processes of two vertebræ, half of the third, and the whole of the fourth; the fourth being the bone which seemed to be the most depressed. I now brought the parts together, putting a tent at the bottom; and put him to bed. He had a chill, succeeded by a fever, and some bilious symptoms, which were carried off by a dose of calomel.

I saw him in a week afterwards. The ulcers in his gluteal muscles, which were produced by lying on his back, were healing up; and he had some additional sensation in his hands. Since then I have not seen him; but I entertain considerable hopes.

I wrote the above several weeks ago: I have since received two letters from his attending physician, and have sent my student down; by all which means I am informed that sensation is returning as rapidly as he can bear it. The pain of returning feeling is so great that he complains very much. It is something like the sensation experienced when "one's leg is asleep," as it is vulgarly expressed. His general health is good; and I have but little doubt of his being soon entirely restored to the use of his muscles. Should I ever be called to a case of the kind again, I would advise an immediate operation.

Should you think this case worthy of insertion in your valuable Journal, I have no objection; it being a new operation, so far as I have seen: but, as my opportunities for hearing novelties have been limited for some years past, there may have been other instances similar to it.

In a subsequent letter to Mr Edward B. Garrigues, of this city, dated May 7, 1829, Dr Smith alludes to this case, nearly as follows: "feeling has now got down into his thighs: you never saw a creature so overjoyed in your life."

We have addressed Dr S. by letter in relation to the above very curious case; and hope soon to be able to add further particulars. We prefer, however, laying the materials in our hands immediately before the public, to causing delay for the mere purpose of amplification.—Ed.

Analytical Reviews.

ARTICLE X.—*Traité de la Moelle Epinière et de ses Maladies. Par* C. P. OLLIVIER, D.M. *d'Angers.*

A Treatise on the Spinal Marrow, and its Diseases. By C. P. OLLIVIER, M.D. *of Angers. Paris*, 1827. *2d edition.* 2 *Volumes. Pp.* 843.

PART I.

The work opens with a description of the spinal marrow. Conceiving that its structure in the adult will be better understood by the history of its gradual development from the first rudiments in the embryo, our author commences with this part of the subject. The soft and delicate texture of the human embryo during the early periods of its formation, together with the rapidity of the changes, constitute so many difficulties in the inquiry. From the labours of TIEDEMANN, the WENZELS, DELLENGER, CARUS, J. J. MECKEL, and DESMOULINS, very important information has been derived; and to these writers he pays a just tribute of praise.

It is not before the end of the third or fourth week from conception, that the cavities of the head and spinal canal are observed to contain a fluid of a light gray colour. About the fourth or fifth week, the medulla oblongata can be distinctly seen, possessing twice the size of the spinal marrow; the latter presenting a slight curve occasioned by the inclination of the head upon the chest. At this period the spinal marrow is composed of two small white cords, whose filaments are seen to be interlaced, particularly where the curve is directed forwards. This can be traced only in the filaments proceeding from the corpora pyramidalia, though extending to the cauda equina.

About the fifth week a slight groove is formed by the apposition

of the two cords, which, at the seventh week, can be discovered through the whole length of the spinal marrow. At this period the first rudiments of the cerebellum may be detected, appearing like two delicate plates. The cervical protuberances, particularly the bulb or cephalic extremity, can be distinguished; and this is accompanied by the appearance of the corresponding limbs. The longitudinal groove can be traced severing the two tubercles recognised as the thalami nervorum opticorum.

In this stage, it is justly remarked by Dr Ollivier, that we must not conclude, because these parts are more easily detected, that, therefore, they have a prior existence. The relations between the several portions of the system are so intimate, that their simultaneous formation must be admitted.

At the beginning of the third month, the spinal marrow is open, as yet containing none of the cineritious part, but consisting only of the white medullary matter. The tuberculi quadrigemini are large and divided by the middle furrow. The thalami are complete, and the cervical and lumbar protuberances are about a third of a line larger than the body of the medulla spinalis. The period at which this canal is closed is not known, and anatomists are not agreed as to the manner in which it is effected; some ascribing it to the gradual deposition of the cineritious matter; others referring the phenomenon to the conversion of the fluid, noticed at an earlier period, into this substance.

At the fourth month, the spinal marrow extends no farther than the base of the sacrum, and the cervical protuberance exceeds the lumbar by one-fourth of a line. At this period, the two middle filaments can be traced to the corpora olivaria, extending their fibres to the tuberculi quadrigemini; and by uniting, form the covering to the aqueduct of Sylvius. The external or corpus restiforme extends so as to form the fourth ventricle, and is united to the cerebellum. The nodus annularis is now perceptible, and the canals of the medulla communicate with the fourth ventricle.

In the fifth month, there is an evident prolongation of the sacral nerves, which gives to the human embryo the appearance of a tail, that is lost before birth. This circumstance has been the subject of much discussion, and has been particularly dwelt on by those, who, like Monboddo, consider our species as naturally endowed with the spinal appendage.

Towards the close of the sixth month, the corpora olivaria are

well defined, and the cords from them and the corpora pyramidalia can be traced through the peduncles of the brain, as far as the thalami nerv. opt. They likewise send fibres to the tuberculi quadrigemini. On the outside, a few fibres proceed to the eminentiæ mamillares; the remainder terminate in the lobes of the brain.

In the seventh month, the transverse bands of the nodus annularis can be discerned.

In the eighth month, the spinal marrow can be traced no farther than the fourth lumbar vertebra, and at birth it is stated not to extend beyond the third. The canal is somewhat diminished and continues for some months after birth. The structure and connexion of the spinal marrow and brain are best determined at this period.

Our author enumerates the various synonymes by which the spinal marrow has been designated; and then enters on the description of the bony canal, extending from the cavity of the skull to its termination at the extremity of the sacrum. The only circumstance not usually noticed in the elementary works is the expansion at the lower dorsal vertebræ and at the lumbar. This has been demonstrated by Mr Earle to have a relation to the extent of motion, observable in the different portions of the spinal column.

The larger veins of the meninges run on the sides, between the openings for the passage of the nerves, and the foramina, seen on the posterior surface of the bodies of the vertebræ, which transmit the veins belonging to these bones. These are exterior to the dura mater, between which membrane and the bones there exists a large portion of loose cellular texture, more remarkable on the surface directed towards the processes, which is often the seat of collections of blood and serum, and sometimes contains fat.

He controverts the opinion, advanced by Gall, and adopted by Meckel, of the spinal marrow being formed by the apposition of segments like the vertebræ in the spinal column.

By the circumstances already mentioned, the dura mater lining the spinal canal is strongly contrasted with the membrane within the cavity of the skull. Its adhesions at the occipital foramen are very firm where the membrane is very thick and dense, especially on the posterior portion. It becomes thinner as it descends towards the middle of the dorsal region; after which it preserves a uniform thickness. The longitudinal direction of its fibres is very visible in the anterior portion from the greater transparency. In those advanced in life, Dr Ollivier frequently observed numerous miliary

spots, imparting an opake whitish appearance resembling marble, confined, however, to the portion directed towards the spinous processes.

The arachnoid membrane lines the internal surface of the dura mater, to which it is very adherent, and is then reflected on the external surface of the pia mater covering the spinal marrow, and each fasciculus of nerves emanating from it. This internal layer is not adherent, but is connected to the pia mater by a loose cellular texture, containing more or less fluid, first noticed by MAGENDIE, who states that the space between the pia mater and the arachnoid is divided, through the whole length of the spinal marrow, by a cellular partition marked by a rapha on the inside of this cavity. This structure is easily developed by inflation. According to MAGENDIE, the fluid entirely fills this cavity, so that the two portions of the arachnoid are in absolute contact, and that there is a free communication with the cavity of the cranium. Whether this fluid be the product of secretion, or rather the consequence of infiltration after death, seems to be warmly contested. We acknowledge that we are inclined to the latter opinion, advanced and ably maintained by PLENCK, who considers all the serous cavities as distended by a halitus or gaseous fluid, whose elastic and compressible character prevents any undue pressure on their several organs, by the varying states of the circulation or other causes affecting the capacity of these cavities. No bloodvessels have been discovered in the arachnoid.

The pia mater constitutes the immediate covering to the spinal marrow. It is less adherent in the child at birth, when it admits of being easily stripped off. Its texture is cellular and different from that investing the brain, with which it has no other affinity than mere continuity. According to KEUFFEL, it possesses a fibrous structure disposed longitudinally, rendered very evident by plunging it in water after its separation from the spinal marrow. It acquires greater consistence as it approaches the sacral termination, and imparts the greater strength observed in this portion of the spinal marrow. It often has a grayish tint, particularly in elderly people, independent of any morbid alteration. This colour is owing to minute black spots, pervading the whole thickness of the membrane. The bloodvessels are spread upon the surface: more numerous on the posterior portion, they traverse its substance and penetrate the medullary matter. Besides these vessels, KEUFFEL detected filaments pro-

ceeding at right angles from the internal or medullary surface presenting the appearance of down. This structure is best observed after the spinal marrow has been steeped in alcohol. From this surface there is a remarkable prolongation, lodged in the anterior middle furrow of the spinal marrow. The pia mater furnishes to each nervous filament a coat constituting the neurilema. There is another production of this membrane, extending laterally and surrounding the roots of the nerves, denominated the ligamentum denticulatum. It terminates at the coccygeal extremity in a thread-like process, sometimes mistaken for a nerve sine pari, which is fixed in the os coccygis. It is sometimes firm and resisting, especially in old people: for about an inch in length it is hollow, and contains a grayish fluid, possessing greater viscidity towards the spinal marrow.

The arteries of the spinal marrow are derived from the vertebral, intercostal, lumbar, and from branches of the hypogastric. They enter at the openings for the passage of the nerves. The most remarkable of these vessels are given off from the vertebral, as they enter the cranium. They are in two pairs: the posterior spinal, which arises from the vertebral, where it comes in contact with the spinal marrow, passes obliquely to its posterior surface, a course parallel to the artery on the opposite side, as far as the second lumbar vertebra. This is a delicate artery: it, however, gives off transverse branches; the internal anastomosing with the opposite spinal artery, the external spread on the neurilema, and distributed in delicate capillary vessels in the medullary substance. The anterior spinal artery arises, likewise, from the vertebral just before its termination in the basilary, occasionally from this artery or the inferior cerebellary. Larger than the vessel lately described, it descends in a tortuous course on the anterior surface of the spinal marrow, supplying its substance. Just as it emerges from the occipital foramen, it joins with its fellow, forming a single artery that descends through the whole length on the anterior surface of the spinal marrow, to which minute branches are distributed.

The veins, seen on the surface of the spinal marrow, are numerous, long, delicate, tortuous, and frequently inosculating, still observing a course corresponding to the direction of the spinal marrow. Their coats are thin, and they are without valves. Though directed towards the head, their size is inversely as their proximity to that part. At the upper portion of the spinal marrow, they unite

on the posterior surface to form two venous trunks, while on the anterior surface there is but one; and these communicate with the superior petrous sinus.

Lymphatic vessels have not been discovered.

The alternate rising and sinking observable in the brain has been long known, and referred to the state of the respiration. Considering the continuity of the spinal marrow with that organ, its situation in a bony canal, which it is far from filling, and the numerous vessels it receives, the inference naturally occurs that it is subject to similar motions. HALLER doubted the fact, though VIEUSSENS had observed the phenomenon, which he explains by the alternate systole and diastole of the vessels belonging to the meninges. This observation of VIEUSSENS was overlooked, though confirmed by two cases showing the influence of respiration in producing these movements in the spinal marrow. One of the cases is recorded by BURG, of a child affected with spina bifida, in whom the tumour was observed to swell when the child made efforts at stool; the other is contained in the Journ. de Med. Aug. 1808. Vol. XXIX. p. 140. The experiments of MAGENDIE, Journ. de Physiol. Exp. April 1820, show that the causes giving the impetus to the circulation, and the afflux of fluid forced into the cavity of the dura mater and the spinal canal, at every act of expiration, modify this phenomenon.

The spinal marrow strictly speaking extends from the medulla oblongata, or cerebral protuberance, to the middle of the first or second lumbar vertebra. KEUFFEL has observed it terminating at the eleventh dorsal and the third lumbar. Throughout this extent it communicates with numerous nerves. Its consistence exceeds that of the brain, though less than that of the nodus cerebri. According to CHAUSSIER, it is firmer in the child at birth than in the strongest man, and softer in the female. In the adult it is about 1-20th of the weight of the brain; in a new born child 1-40th.

The medulla is not a perfect cylinder; for it gradually diminishes as it proceeds from the head, and is somewhat flattened in the antero-posterior diameter. It presents, likewise, three remarkable protuberances; the first termed the superior or cephalic bulb by CHAUSSIER, and known to the ancients as the cauda medullæ oblongatæ; the second or cervical protuberance extends from the second cervical vertebra to the first dorsal, its greatest dimensions being opposite to the fifth or sixth vertebra of the neck; the third, or lumbar, commencing with the tenth dorsal and terminating with the

last vertebra of the back. The second enlargement corresponds to the space between the second cervical and the first dorsal nerve; the third, to the space between the first lumbar and the third sacral nerve. These protuberances are larger in proportion as the individual approaches the age of thirty, and less in the advanced period of life.

In addition to the corpora pyramidalia and olivaria, recognised by anatomists, Dr O. notices two other bodies, first described by Rolando, according to whom these tubercles are seated on the outside of the corpora olivaria. They consist of a portion of the cineritious substance of the medulla spinalis and oblongata, and may be traced as far as the fourth ventricle, where they resemble two spear-shaped bands, placed between the corpora pyramidalia, as these form the calamus scriptorius.

On the anterior surface of the medulla spinalis, there is a longitudinal furrow, whose sides are formed by bands apparently resulting from the gradual contraction of the oblong half ovoid eminences, situated on the internal and inferior portion, covering the calamus scriptorius. A similar though more superficial furrow exists on the posterior surface. On the sides of these furrows may be seen the fibres, constituting the roots of the nerves.

On a transverse section of the spinal marrow, it is observed to be composed of an extremely white or medullary matter, and an internal cineritious substance. For this demonstration a very young subject should be selected; as in the advanced periods of life the line of demarcation is not well defined. The figure and size of the internal cineritious substance seem to be affected by the point where the section is made, and it is more abundant when the nerves are given off. The proportion is larger in man than in the brute, which perhaps explains the difference of figure assigned by those who have treated of this subject. In man there is no space or cavity between the cineritious and medullary matter, while in the horse, a canal pervades the whole length of the spinal marrow.

The white or medullary matter, according to Ollivier, is composed of four layers or bands; two anterior, occupying two thirds of the circumference; and two posterior, to which the remaining portion is assigned. These may be separated into filaments, consisting of delicate membranous tubes, in which is lodged the white medullary matter. The latter may be removed by a solution of potassa, from 3ss to 3j in the f3j, in which the spinal cord should be macerated for some days; after which the part is to be repeatedly

washed in clear water, and then laid on a black board, when there will be exhibited, innumerable threads, proceeding at right angles from the internal surface of the pia mater, and converging towards the centre of the spinal marrow. Their tenuity is such, that they are not always discernible with the naked eye. The arrangement and intimate connection of these fibrillæ afford a series of longitudinal spaces, enclosing the medullary matter. Hence, on cautiously separating the two halves of the spinal marrow, we perceive a multitude of longitudinal bands, especially when the part has been hardened by immersion in alcohol.

This is the structure as developed by the experiments of KEUFFEL and OLLIVIER. The latter performed the ablutions of the medullary matter by a delicate current of water, directed through a fine syringe, from which the piston had been removed.

Of all these prolongations from the internal surface of the pia mater, the most conspicuous is the semi-partition extending into the middle anterior furrow of the spinal marrow. It is almost as delicate as the arachnoid membrane, yet it possesses the firmness of the pia mater, and is vascular. It has a series of triangular processes, which penetrate the medullary matter, and are easily detected after immersion in alcohol.

A very delicate filamentous structure may likewise be traced in the cineritious substance.

Dr OLLIVIER considers these fibrillæ as composed of cellular membrane, and ramifications of vessels, confirmed, as he thinks, by the arborescent distribution of its several parts.

At the close of this article he denies the existence of any canal, as described by GALL, NYMANN and CLOQUET.

Each nerve that arises from the spinal marrow has two roots, anterior and posterior, whose relations in point of size are in the neck as 1 to 2, in the back equal, and in the loins and sacrum as 1 to 1 1-20.

Each root is formed of several distinct fibres, whose tenuity is more remarkable in the anterior root; a difference which may be observed through the whole extent of the spinal marrow, particularly in the brachial plexus in man.

The continuity of the cineritious and medullary matter in the root of the nerves has been denied by some anatomists; though its existence is generally admitted. Of this latter sentiment Dr OLLIVIER is the advocate.

Besides the nerves arising immediately from the spinal marrow, there are others which have an intimate connection with the medulla oblongata, whose nature it is interesting to know. Of this class are the respiratory nerves of Mr C. BELL, situated between the corpora olivaria and restiformia.

PART II.

The influence which the spinal marrow exerts in the preservation of life, and on the exercise of the internal functions, places this organ in the rank of those which are the most essential to the living animal. Excepting in some of the inferior classes, it is found more or less varied in form, more perfect in proportion as perfection prevails in the entire organization.

At an early period in the history of medicine, lesions of the spinal marrow had been observed to produce a paralysis in the parts below the injured spot. To the knowledge thus obtained, successive additions have been made by experiments undertaken at different periods, the history of which has been collected by HALLER*. We are, however, indebted to inquiries of a very modern date for precise information respecting the influence of particular parts of the spinal marrow, as connected with sensation and motion. The experiments of BELL and MAGENDIE have shown that the posterior roots of the spinal nerves are the seat of sensation, while motion is dependent on the anterior. According to OLLIVIER, however, the results of irritation on the several roots of these nerves, are not quite distinct; which he explains by the two lateral portions of the cineritious matter being blended at the points of contact: and he farther remarks, that the intimate union of the two roots, in the intervertebral ganglion, must affect their respective properties.

When one side of the body is affected with paralysis or convulsions, a lesion of the corresponding side of the spinal marrow generally exists. The only authentic case to the contrary is recorded by PORTAL.

What is the comparative influence of the cineritious and medullary substances on the functions of the spinal marrow?

Dr OLLIVIER is of opinion, that the sensibility resides in the cineritious substance, and that the motions are dependent on the me-

* Elem. Phys. Tom. IV. p. 324.

dullary. In support of this opinion, he adduces the following results of experiments made by BELLINGERI.

1. The posterior bands of the spinal marrow preside over the motion of extension only.

2. The anterior bands are connected with that of flexion: therefore these bands antagonise each other.

3. The posterior bands produce a relaxation of the sphincter vesicæ, and a contraction of the sphincter ani.

4. The anterior cause a contraction of the sphincter vesicæ, and a relaxation of the sphincter ani; whence the two portions act as antagonising powers on the sphincters, but in an inverse ratio.

5. The anterior and posterior bands affect the motion only, and not the sensibility.

6. The medullary matter is the exclusive seat of motion.

7. The influence of the cineritious substance is confined to the touch.

In further confirmation Dr OLLIVIER states, that the inflammation of the spinal marrow always commences in the cineritious substance, and is announced by numbness and tingling symptoms, which, he thinks, could not exist, if this central portion exerted no influence on the functions of sensibility and motion. Allowing the observation its utmost value, it does not prove that the sensibility is exclusively seated in the cineritious substance, unless the fact be established, that the motions remain unaffected,—on which point he is perfectly silent.

But the functions of the spinal marrow are not confined to the production of sensibility and motion in the trunk and limbs, in conveying impressions to the brain, or in the impulses of volition from that organ, and transmitting them to the muscles of voluntary motion. For this nervous centre exerts a decided influence over the phenomena, intimately connected with the preservation of life. Thus respiration is in immediate dependence, and holds an intimate connexion with the integrity of the upper portion of the spinal marrow as formerly noticed. On account of the particular disposition of these nerves and the office they perform, Messrs BELL and BELLINGERI have assigned a third band, intermediate to the anterior and posterior, which they consider as presiding over the organic and instinctive functions.

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* Anat. Med. Tom. IV. p. 116.

We cannot assent to the correctness of the statement made by Dr Ollivier, that in lesions of the spinal marrow opposite the fifth cervical vertebra, respiration is rendered anxious, and the individual finally sinks, because the influence of the phrenic and intercostal nerves has been interrupted. The phrenic nerves remain untouched; and on the diaphragm to which they are distributed the whole labour of respiration depends. It toils hard,—for it is deprived of the assistance of the other motive powers destined for enlarging the capacity of the thorax, and in the respite of its action receives no aid from the power of the abdominal muscles in expelling the air from the lungs. Hence the whole function is at fault, and gradually fails. When the injury occurs at, or above, the third cervical vertebra, death follows instantaneously; because all the motive powers concerned in respiration, cease to receive the essential influence from the spinal marrow.

Upon these facts the truth of the proposition will be readily admitted, that the upper portion of the spinal marrow exercises an important dominion over the vital functions, and is, therefore, in some degree the fountain of life. Judging from the nervous distribution belonging to the heart, and from experiments lately performed by Wilson Philip and others, the actions of this organ are independent of any portion of the medulla below the occipital foramen.

The digestive organs derive their nerves from the trisplanchnic, which has many and intimate connexions with the spinal marrow below the neck; but the influence of the superior portion of this great nervous cord and of the brain itself, is conveyed to these organs by means of the supplies from the great sympathetic. What share each portion may have in the various functions belonging to the viscera contained in the abdomen has not been ascertained. The effects produced on these organs by lesions of the spinal marrow will come before us in the progress of our analysis.

Here we close the review of the anatomy and physiology of the spinal marrow, in which we have endeavoured to give, in a condensed form, the principal facts and speculations presented by Ollivier. It is now incumbent on us to examine the pathology—a task more difficult, though certainly not less interesting to every one engaged in the healing art. We hope to do justice to the author, and to inspire in our readers a spirit of inquiry, that may lead to fuller information on a class of morbid affections hitherto imperfectly understood, and concerning which valuable additions

may be made to our stock of knowledge, by recording the symptoms during life, and by noting the alterations from the natural structure observed after death.

PART III.

The pathological history of any organ to be complete must embrace every alteration of structure whether congenital or accidental. Dr OLLIVIER properly begins with those that are congenital; and he first treats of the total absence of the spinal marrow, termed by BECLARD amycloisa. He notices the case recorded by Dr CLARKE in the Philosophical Transactions, 1793, where not a trace of the nervous system could be detected. He pronounces the case to be unique. Instances of deficiency of the spinal marrow have been numerous, and we are referred to the works of MORGAGNI, who has collected all the histories published by preceding writers. But he considers them on many occasions as not possessing that precision in the details which the subject required. The case from VALSALVA, and another recorded by LITTRE, Mem. Acad. Roy. 1701, p. 24, are adduced by him as affording sufficient evidence of the total absence of the spinal marrow. FAUVEL in 1711 presented to the Academy a fœtus without brain and spinal marrow, in other respects perfectly formed, that lived for two hours. One recorded by MERY lived twenty-one hours. Dr LALLEMAND, in an inaugural dissertation, published at Paris in 1818, has described a male fœtus of the eighth month, in whom, through the whole length of the vertebral column, the dura mater and the other membranes were spread open, presenting a mere groove instead of the natural cavity. At the sides there were two rows of white tubercles of the size of a pin's head corresponding to the intervertebral spaces. The nerves terminated at these tubercles. A case strongly resembling this is likewise given by GEOFFROY ST HILAIRE, in a work on monstrosity. In these, as in all the observations that have been circumstantially detailed, the absence of the spinal marrow has been accompanied by a corresponding loss of the brain. Dr OLLIVIER pronounces the two cases cited by MORGAGNI from RUYGER too loose in their description to be admitted as exceptions to this position.

In some recent cases of total, or apparent, absence of the brain and spinal marrow, an attentive examination has detected, in the place of these organs, a sac, occupying the upper and back part of the head and extending along the spinal canal, filled with a yellowish

viscous fluid. This fluid Dr Ollivier views as the rudiment of the brain and spinal marrow, agreeably to the condition observed in the early period of the fœtal state; the ulterior changes being interrupted, though the other portions of the system continue to advance in the regular development of their organization. This opinion was advanced long ago by Huber*, Malpighi†, and Bellini. Morgagni however ascribes all the phenomena to an hydropic condition of these organs. Perhaps there is sufficient evidence that either cause may operate to producing this effect.

We shall pass over some other congenital variations from the natural structure noticed by Dr Ollivier, because we have not been able to perceive that they contribute in any degree towards explaining the physiology or pathology of the spinal marrow. We allude to the existence of a cavity in the centre of this organ, and to its division into two cords, records of which may be found in Morgagni, Bonnetus, and other writers, who have collected observations on the anatomical structure of monsters.

Spina bifida, or hydrorachis as it is termed by our author, is one of those congenital deviations from the natural structure frequently observed in children long after birth, and which has been occasionally the subject of medical treatment. It is characterized by one or more tumours occupying the whole extent, or several portions of the spinal column.

The tumour varies in figure and size; sometimes it is transparent, on other occasions it has been observed to be opake. It may have a covering of the common integuments, but more generally its coats differ from the dermoid texture, being sometimes pale and semitransparent; in other instances presenting a red or purple colour.

This affection is most frequently observed in the loins, though it has been noticed in other portions of the spine. The cleft may extend to the bodies of the vertebræ; more generally it is confined to the arch supporting the processes, particularly the portion on which is seated the spinous process.

The contents of the tumour are fluid, limpid, and scarcely to be distinguished from that seen in the ventricles of the brain. According to the experiments of Bostock and Marcet, it affords less albumen and less saline matter than the serum of the blood.

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* De Medulla Spinali.

† In Posth. p. 39.

This fluid may be contained in the cavity of the pia mater, or it may be lodged between it and the dura mater, or even exteriorly to the latter membrane. In the first instance, there will be more or less destruction of the spinal marrow, which is the case when it is complicated with hydrocephalus. When the fluid is collected on the outer surface of the pia mater, the spinal marrow will be less or not at all affected.

This mal-conformation, though impairing in no degree the functions of the fœtal state, is fraught with danger after birth, as the rupture of the tumour has generally been followed by death.

The means of information are too scanty for hazarding the faintest conjecture respecting the causes of this malady.

For the cure, it has been proposed to make moderate pressure by compresses and suitable bandages. HEISTER states that a surgeon, named STEUBER, practised this method with success. Sir A. COOPER has recorded two cases in which the absorption of the fluid was effected; but on the removal of the pressure, the tumour was liable to return, and the patients were compelled to wear a truss. Of course this treatment is to be considered as merely palliative. This distinguished surgeon, however, in one instance effected a perfect cure by repeatedly puncturing the tumour, as proposed by Mr ABERNETHY; but this case, and that from MORGAGNI stand as the only ones on record, in which the attempt has been crowned with success. For fuller instructions, our readers are referred to the Medico-Chirurgical Transactions, Vol. II. in which these interesting cases are detailed. MORGAGNI, Epist. 12, Art. 9, notices a case of spina bifida, which being punctured by a surgeon, the tumour continued to discharge a limpid fluid for six days, when the wound cicatrized and the child got well. DESSAULT and B. BELL have recommended the passage of a seton; but the practice is justly reprobated by Dr OLLIVIER.

Various morbid affections are observed to follow injuries, inflicted on the spinal marrow. They are accompanied by symptoms, varying in character, according to the particular seat of the injury. These lesions will now occupy our attention.

A wound, inflicted between the occipital bone and the first vertebra of the neck, penetrating the corresponding portion of the spinal marrow, is followed by instant death. Two remarkable cases of this kind are given by PETIT, and are cited by Dr OLLIVIER. Numerous others might be obtained from the records of surgery.

Dr O. remarks, that if the injury occur at a different part, though very near, death may not be the immediate consequence, and life may continue even for some days. In illustration he cites a case from DUVERNEY*. The man received a wound from a pistol ball, that sunk deep in the upper and lateral part of the neck; he ran a few steps, and then fell senseless. He had convulsions in the superior extremities, and paralysis of the inferior. After copious bleeding, he recovered his senses, but without the power of speech. On the fourth day, he died. The examination after death exhibited a fracture and depression of the transverse process of the second vertebra, causing compression of the spinal marrow and division of the large nerves.

Where there is a mere puncture of the spinal marrow, though penetrating deep, the severe symptoms that immediately follow are gradually dissipated, and life may be preserved. An example may be found in MORGAGNI†, the history of which is transcribed in the work before us. A case, similar in many of its circumstances, is recorded by BOYER‡, which is transcribed at length by Dr O. In twenty days the wound was healed, and the man left the Hospital with complete paralysis of the right side, and insensibility of the left side below the arm. This condition continued ever after. The symptoms in this case can not be explained by the mere wound of the spinal marrow. They evidently involve some other derangements which have not been duly appreciated. Effusions, inflammations, and alteration of structure may follow, and induce their respective train of symptoms.

In the lesions opposite to the lower cervical vertebræ, the following symptoms have been observed: Speech difficult, or impracticable; deglutition likewise difficult, or impracticable. Respiration more or less impeded, according to the seat of the injury, at or above the fourth vertebra of the neck. Neither the diaphragm nor intercostal muscles can act, and the office is performed by the superior respiratory muscles connected with the neck and shoulders. Every act of inspiration is accompanied by a violent elevation of the shoulders and chest. There is no corresponding movement in the walls of the abdomen. There is great anxiety and apparent suffo-

* Maladies des Os. Tom. I. p. 24.
† Sed. et Caus. Morb. Ep. 53. A. 22.
‡ Maladies Chir. Tom. VII. p. 9.

cation. Death soon follows. But when the injury occurs at or below the fifth vertebra, the origin of the phrenic nerves being undisturbed, the breathing is freer, the inspiration is strong, but expiration is unaided by the contraction of the abdominal muscles. The patient can yawn, but sneezing and coughing are impracticable. There is complete paralysis of the superior extremities, when the injury occurs above the junction of the fifth and sixth cervical vertebræ. An imperfect motion may sometimes be observed, which is to be ascribed to the action of the muscles that move the shoulder. The erection of the penis is a frequent symptom. It was first distinctly noticed by M. DUPUYTREN; and we find that it occurred in one half of the cases contained in the work under review.

When the lesion is at or below the second dorsal vertebra, the upper extremities retain their sensibility and power of motion. The breathing is difficult, because the intercostal muscles are inactive. But this difficulty diminishes, in proportion as the injury approaches the lower portion of the dorsal region. The expiration is imperfect, for the action of the abdominal muscles is destroyed.

As life is prolonged, other symptoms present; as constipation, and inability to discharge the urine. The introduction of the catheter is required, and the instrument is often incrusted to a degree that is not observed on other occasions. Frequently the post mortem examination exhibits great alteration in the structure of the bladder. Extensive sloughing of the soft parts covering the sacrum adds to the sufferings of the patient.

In the treatment, the first indication is the removal of all foreign bodies, whose presence cannot fail to aggravate all the symptoms. In cases of fracture of the vertebral processes, and consequent compression of the spinal marrow, it has been proposed to relieve this compression by cutting down to the spinal column and removing the depressed bone. The operation has been practised, but has only proved partially successful. The immediate indications for the operation were fulfilled; the patient recovered his sensibility, but the power of motion was never restored. The whole cavity of the abdomen became violently inflamed, and the man died on the fifteenth day after the operation.

Bloodletting, general and topical, cold or tepid applications to the part, low diet and absolute rest, must be resorted to in proportion to the exigences of the system. Attention must be paid to the state of the bladder, and undue distention guarded against by the introduc-

tion of the catheter. The body must be kept soluble, but purging should be avoided, as interfering with the rest which is so essential in the treatment of these severe accidents.

The compression of the spinal marrow may be the result of causes operating in a more gradual manner. Hence the progressive failure of sensation and voluntary motion, proportioned to the degree and extent of this compression. The symptoms usually noticed, are a numbness and tingling of the part, similar to what occurs from accidental pressure on the nerves. The limbs refuse to perform their proper office; the patient staggers, especially when walking on uneven ground. The skin becomes dry, throwing off branny scales, and the lower limbs are prone to œdematous swellings. Constipation and a difficulty in voiding the excrements are often observed. The contents of the urinary bladder cannot be discharged without considerable effort. Frequently the person complains of pain and soreness, that are mistaken for rheumatism. Convulsions and chorea have been frequently traced to compression of the spinal marrow.

Among the specific causes are ranked exostosis, thickening of the ligaments, and tumours of various descriptions, diminishing the calibre of the spinal canal. Caries of the bodies of the vertebræ, by causing an unnatural angle, has been frequently observed to produce the train of symptoms, dependent on compression of the spinal marrow; and in the opinion of Dr Ollivier, it is only in cases of the latter description, that there is any prospect of relief. For this purpose he relies on the use of caustic issues as recommended by Pott.

He next examines the effects of concussion of the spinal marrow proceeding from falls or blows. The shock thus produced may be followed by an effusion of blood; when the symptoms of compression will present. These are, loss of voluntary motion and sensation; the involuntary discharge of the fæces and urine; convulsions; and death.

Where life is not destroyed, the symptoms may gradually disappear in proportion as the effused blood is absorbed. Dr Ollivier states, as diagnostic of concussion, that he never knew it followed by priapism, so frequent in the other injuries of the spinal marrow.

In the bodies of persons advanced in life, there is frequently observed a remarkable dilatation of the venous system belonging to the vertebræ and spinal marrow. These vessels are not supplied

with valves: *the circulation* is necessarily languid, and *whatever* can retard the return of blood will occasion more or less congestion. Upon this principle may be explained the cases of paralysis without injury of the intellectual faculties. The persons are affected with weakness and pain of the limbs, gradually extending from the lower to the upper parts of the body. The breathing is sometimes affected, being rendered slower yet regular: the circulation is not disturbed. The functions of the rectum and bladder are rarely affected, though costiveness is a usual attendant. In the severer forms, pain is often felt in the back, in proportion as the paralysis advances.

This congestion may lead to the accumulation of serous fluids in different portions of the spinal cavity. Such collections are often observed between the pia mater and arachnoid membrane. The paralysis will be characterized, according to the position and extent of these effusions. By the action of the absorbents, such accumulations may be gradually removed, and the individual will in proportion have all his functions restored. The over distended vessels may be ruptured, and the pressure from the extravasated blood may induce an aggravation of all the symptoms and even death. According to our author, a rupture or division of the medullary fibres, resulting from the effusions of blood, is followed by permanent paralysis; as the continuity of these fibres cannot be restored. In the cases of recovery from paralysis, proceeding from effusions of blood in the medullary substance, he supposes the accumulations of blood to have occurred between the medullary fibres, without their division. As a physiological fact, it may be stated, that in nerves which have been divided, the continuity is restored very slowly; and consequently that the functions of the parts, to which such nerves are distributed, remain long impaired. The case recorded by Mr Abernethy affords convincing proof, that, even in the human subject, the paralysis from division of the nerves is not necessarily permanent.

Our pathological views are necessarily influenced by the notions we have imbibed respecting the healthy structure and condition of the several organs of the body. It has been questioned whether, in the healthy state, the vertebral canal is the seat of a serous fluid. Haller, Plenck, and many other physiologists of the highest character have considered the serous fluid, discovered in the various cavities of the body after death, as resulting from the condensation of the natural halitus; or as proceeding from the exudation of the

fluids contained in the vessels or organs in the immediate vicinity. The fluid found in the ventricles of the brain, in the pericardium, in the thorax and abdomen, are familiar to every student of medicine; and they have received appropriate appellations. In addition to these, COTUNNIUS, as early as 1764, described the existence of a palpable fluid contained in the cavity of the vertebral canal. As the experiments and observations lately published by MAGENDIE have excited considerable interest, we believe the following quotation from COTUNNIUS to be worthy of attention.

"Quicquid, autem, spatio est inter vaginam duræ matris et medullam spinalem, id omne plenum etiam semper est non medulla quidem ipsa in viventibus turgidiore non nube vaporosâ, quasi in re adhuc obscurâ suspiciantur summi viri, sed aquâ ei quidem simili quam circa cor continet pericardium quæ caveas cerebri ventricularum adimplet, quæ auris labyrinthum, quæ reliquiæ tandem complet corporis cava libero aere nequaquam adeundum*."

We have remarked, in the majority of cases adduced by our author in illustration of the morbid changes incident to the diseases which engaged his researches, that congestions of blood were often observed throughout the capillary system, presenting the red colour which has been lately insisted on as indicative of inflammation. In some of these cases the nature of the indispositions was complicated; but the sixty-second case is of a character not to be mistaken. A soldier, aged 26, died from a bayonet wound, inflicted on the left temple. The examination of the body showed that the instrument had penetrated deep into the brain. Blood was effused over the lobes and base of the skull. It flowed freely from the vertebral canal when the brain was removed. The lungs were gorged with blood. The mucous membrane of the stomach was of a deep red, and thickened. The small intestines presented many red patches, and the contents of these viscera were extremely acid. In the large intestines, small granulations of the size of hempseed were seen elevating the mucous membrane. The membrane lining the bladder was pale, except at the portion denominated by the French trigone vesicale, which was finely injected.

The inflammation of the membranous coverings of the spinal marrow is generally complicated with a similar affection of the corresponding meninges of the brain. In the dead body, it is characterized by opake membranous exudations of a pale straw colour,

* Sandefort, Thesaurus, Vol. II. p. 411.

varying in thickness and consistency; sometimes spread over the whole spinal marrow, or distributed in patches, and generally lodged between the arachnoid and pia mater. On removing this exudation, the cellular texture intervening between the arachnoid and pia mater will be found thickened and injected. Dr OLLIVIER contends, that the arachnoid never exhibits any traces of inflammation, and supports this doctrine by the observations of BECLARD*, who states "that vessels have never been discovered in this membrane, not even in the diseased state." While we admit that on many occasions the appearances can be explained on the principles laid down by our author, yet the agglutination of the opposing surfaces of the arachnoid membrane, noticed even by Dr O. himself, exhibits sufficient evidence that this membrane may be the seat of inflammation. We believe that in the prevailing rage for the specific location of the several morbid changes, the subjects have not been examined with that scrupulous attention, which can alone establish the dogmas that have been of late promulgated. Precision in our views is certainly desirable; and to attain this object, the most assiduous attention should be devoted to every minute circumstance connected with pathology, as observed during life or after death. Discrepancy of opinion will continue to disfigure medical science, as long as partial and hasty views are allowed to constitute the foundation on which the superstructure is to be raised.

Among the morbid appearances noticed by Dr OLLIVIER, we may mention serous collections and cartilaginous plates, which he has observed to follow chronic inflammation of the contents of the spinal canal.

The organs which receive their nervous supplies from the spinal marrow become secondarily affected, and generally exhibit more or less evidence of sanguineous congestion. Where, however, the disease has been rapid in its course, the traces of inflammation may not be discerned in the post mortem examination.

The symptoms which denote the presence of inflammation of the meninges of the spinal marrow (meningitis rachidiana) are in the beginning often obscure. The disease is generally ushered in by a sense of uneasiness and weariness of the limbs, accompanied by constipation, dysury, or even retention of urine. The patient complains of pain in the back, sometimes confined to the loins. This

* Anat. Gen. p. 251, 1st Edit. p. 214, 2d Edit.

pain is at first dull, and soon extends to the limbs. From what has been already stated, the diagnosis will be often found difficult, in consequence of the affection being complicated with inflammation of the meninges of the brain. The two following symptoms are considered by our author as pathognomonic.

The first consists in a general contraction of the muscles on the posterior part of the trunk, varying from a simple rigidity to the more violent contortion, as in episthotonos, the head being thrown back and the spine bent into an inflexible arch. These tetanic contractions are observed particularly when any attempt is made to move the patient; though, on some occasions, they occur when no external movement has been imparted to the body. These contractions appear to be excited by the severe paroxysms of pain, are very frequently remittent, and do not always prevent the patient from turning in bed.

The other symptom is the pain, more or less severe, felt in the back, propagated from the point where the inflammation is the most intense. Like the muscular contractions, it has its remissions, and even intermissions. According to Dr Ollivier, the pain, on these occasions, is not increased by pressure. The case recorded by Kouff, in the Physiological Journal of Magendie, he regards as no exception to this rule; for there was deformity in the spinal column, though the morbid appearances of the vertebræ were not noticed in the dissection after death.

This severe pain, referred by the patients to the course of the spinal column, is a constant symptom of the inflammation of the meninges. It radiates from the primitive point, extends to the limbs, and is aggravated by every change of position; causing the most excruciating agony. This increased sensibility is peculiar to the inflammation of the membranes, and serves to distinguish it from the inflammation of the spinal marrow, where there is generally a total loss of sensibility.

The breathing is short and difficult. The pulse is little changed in the beginning, being always regular. In the progress of the disease it becomes more frequent, and diminishes in volume, while the motions of the heart are strong and rapid. In proportion to the severity of the pain, sweat breaks out, which is particularly observed where the spasmodic contractions are intermittent.

From the violent spasms, so constantly observed in the affection under consideration, some late writers have considered tetanus as

dependent on inflammation of the meninges of the spinal marrow; but Dr Ollivier remarks that the coincidence is by no means uniform, and not so frequent as to justify this hypothesis.

The opinion entertained by Jansen, that the convulsions and spasms observable in cases of curved spine are owing to the inflammation of the meninges of the spinal marrow, is adopted by our author.

The prognosis is unfavourable, and the majority of writers have deemed inflammation of the meninges uniformly fatal. Dr O. quotes a case from Frank, where the disease was removed by early and free bleedings, together with other means belonging to the antiphlogistic plan.

Among the causes may be ranked, external violence, as blows, falls, and severe jolting. Those persons, afflicted with rheumatism, are said to be more prone to the disease. It is often induced by vicissitudes of temperature; and rheumatism may be translated to the spinal marrow, as to the heart and other organs. At the same time, we must bear in mind that the pains incident to neuralgia are often denominated rheumatic.

The *treatment* will consist in the strict adherence to the antiphlogistic plan. Among the means for fulfilling this indication, our author has suggested the application of ice or cold water along the back, after the manner observed to be so successful in inflammation of the meninges of the brain.

The inflammation of the proper substance of the spinal marrow has received various denominations. The term myelitis, introduced by Harles, is preferred by our author, and considered as sufficiently contrasted with encephalitis, the term employed to designate the inflammation of the brain.

The earliest symptoms, observed in this disease, consist in a numbness of the fingers and toes, accompanied by some impediment in the motions of the parts, and occasionally by a sense of coldness. To these succeed partial or general convulsions. Pain is referred to some portion of the spine, according to the seat of the inflammation; but, agreeably to the observations of Dr Ollivier, this pain is not aggravated by motion or by pressure. Klohs states that lying on the back, and particularly on a feather bed, is painful. Copeland has remarked the peculiar heat excited in the affected spot, by passing a sponge dipped in warm water along the spine.

The sensibility and motion may be simultaneously or singly im-

paired. The progress of the paralysis is generally from below upwards, though the reverse is said sometimes to occur,—a circumstance which does not admit of a ready explanation. If the disease be complicated with inflammation of the meninges, pain may be observed on motion. Dr O. mentions one case where this symptom was present, though the post mortem examination exhibited no trace of inflammation in these membranes. Constipation is generally observed, while the discharge of urine frequently remains undisturbed. It is only in the last stages, that the involuntary discharges of fæces and urine have been noticed.

In the early stage, the pulse is frequent, full, irregular, and bounding. Occasionally the fever is intermittent. The breathing is frequent and difficult.

These are the general symptoms strictly appertaining to the acute inflammation of the spinal marrow; but the nervous communications between this cord and the several organs of the human system lead to the production of a variety of sympathetic affections, according to the peculiar seat of the inflammation. If the inflammation extend to the medulla *within the skull*, there will be disturbance of mind, violent delirium, trismus, grinding of the teeth, a dry red tongue, difficulty of swallowing, loss of speech, short and hurried breathing, occasional vomiting, hemiplegia more or less sudden, or even general paralysis, the partial destruction of sensibility and motion singly, or the total abolition of both, according to the portion and extent of the spinal marrow affected.

The inflammation of the cervical portion is marked by pain in the back of the neck, rigidity of the muscles of the neck and upper extremities, convulsions, and paralysis. The breathing is difficult, and performed by the diaphragm. Deglutition is also difficult, and the pulse is frequent and hard.

When the dorsal portion, between the two bulbs, is inflamed, the trunk is agitated, the limbs remaining unaffected with convulsions, unless these bulbs be the seat of the disease. The inspiration is short, and performed by the action of the external muscles. Palpitations and irregular pulsations of the heart may be observed. Fever.

Violent pain in the loins, weakness and paralysis of the lower extremities, colics, sense of constriction of the walls of the abdomen, the retention or the involuntary discharge of the fæces and urine, are the symptoms observed when the lower portion or the crural

bulb is affected. When the inflammation is chronic, these several symptoms are slower in their progress.

Hence many cases of supposed rheumatism, with weakness of the limbs, may be justly ascribed to this affection of the spinal marrow. Dr O. is of opinion, that palpitations of the heart, angina pectoris, particularly when accompanied by pain extending to the neck and along the arm, may, on many occasions, be referred to the same source.

Death is the most usual consequence. Yet there is reason to believe that a favourable issue has in a few instances been obtained, by the strict observance of the antiphlogistic treatment.

With the advance of age many alterations may be observed in the animal economy. The gradual failure and abolition of some of the faculties, the reduction of stature, and the wasting of the flesh, do not escape the most superficial observers. The internal organization is alike subject to changes from the perfect and healthy condition. HALLER, MORGAGNI, and FISCHER, remarked the diminished volume and increased density of the brain in old people. This fact has been emphatically stated by COTUNNIUS. According to the observations of CHAUSSARD and DESMOULINS, the spinal marrow is at the same time sensibly diminished in size, while its density is manifestly increased. This condition our author denominates atrophia senilis. Every departure from the sound and healthy condition of the human system is interesting to the medical practitioner; and the value of such information will be duly appreciated, though we must all despair of ever possessing the power to stay the hand of inevitable fate and bring back the body to its pristine vigour.

Our author next passes to the hypertrophy of the spinal marrow, which he is disposed to consider as a chronic form of myelitis; and he refers to cases detailed under that head, in illustration of this view.

The meninges have been observed occasionally to be the seat of hard depositions, resembling cartilage or bone. Dr OLLIVIER states, that they are more frequently found in the arachnoid membrane on the surface directed towards the pia mater, rarely on the other surface, and still more rarely on the membrane lining the dura mater. They have been most frequently seen in the lower portion of the dorsal region. They have been detected in persons, who had been affected with epilepsy, or with pains supposed to be rheumatic.

On some occasions, no symptoms have occurred, denoting any disturbance in the functions of the spinal marrow.

The existence of tumours pressing on the spinal marrow, and the consequent train of symptoms have already engaged our attention. We, therefore, deem it unnecessary to accompany our author in the further details offered in the present section of his work; the more especially, as the precise character of such adventitious growths cannot be determined, until death has closed the scene; and the practitioner who is apprized of their probable existence will form his prognosis, and conduct the treatment, with a caution suited to the present imperfect state of medical science.

The functions of the animal economy are regulated by the nervous system, of which the spinal marrow may be considered as the centre. The effects of injuries, and of certain morbid conditions of this nervous centre are necessarily propagated to the various organs; and the actions appertaining to them become interrupted, or imperfectly performed. The question naturally presents itself to the pathologist, whether the morbid impression, thus communicated to the viscera, be accompanied by a corresponding derangement of structure; or in other words, whether the examination of the dead body will exhibit any diseased appearances in the organs whose functions have been impaired. The observations of M. Chevalier, as recorded in the Medico-Chirurgical Transactions, show that injuries of the spinal marrow, accompanied by paralysis of the bladder, lead to a remarkable alteration in the structure of that viscus. This fact we had an opportunity of seeing manifested in an eminent degree, in a case of paralysis, produced by an effusion of blood within the spinal marrow, nearly opposite to the fourth dorsal vertebra. In looking over the observations, collected by Dr Ollivier, we have noticed considerable changes in many of the viscera, where the primary affection could be traced to the injury of the spinal marrow. But the perusal of these cases does not satisfy us that these changes are uniform. Future observation can alone determine the full extent of the connexion and dependence of these phenomena.

We have consulted most of the authors referred to by Dr Ollivier, and have critically examined the excerpts which he has made from their writings. It is with great pleasure we offer our feeble testimony in favour of the accuracy and fidelity with which he has

executed a work on the anatomy and pathology of the spinal marrow; a work that cannot fail to be interesting to every one seeking information in this department of medical science.

ARTICLE XI.—*Commentaries on the Causes, Forms, Symptoms, and Treatment, Moral and Medical, of Insanity. By* GEORGE MAN BURROWS, M.D. *Member of the Royal College of Physicians of London, &c. &c. London*, 1828. *Pp.* 716.

Of the dread array of diseases with which man during his sojourn on this earth is afflicted, insanity is the most fearful in its nature and consequences. To other ills, whether of person or fortune, he is able, by his own fortitude and resignation or by the advice and assistance of friends, to oppose some barrier for obtunding their point or mitigating their violence. But to the insane man the recommendation of patience, the holding out the balm of religion, or the more elaborate reasonings of philosophy, are too often but fresh causes of distemperature. He may seem to lend an ear to our counsel: he hears, but he understands not. He is governed by an imperious impulse, which forbids his mind to dwell on the sober realities of life, and disables it from connecting in suitable causation the phenomena around him. The material world is full of danger to one so circumstanced as to convert the elements into so many causes of destruction. He feels, but fears not the winter's pinching colds, or summer's parching heat: the yawning chasm and precipitous height are, in his delirious ravings, but as level ground; and the impetuous and overwhelming torrent conveys to his mind no stronger sensations than would the rippling stream to the quiet gazer at peaceful nature. In equal ignorance and misconception does the unhappy maniac treat the soothing attentions and blandishments of friends and relatives. The once endearing titles of mother, wife and sister, are now strange sounds to his ear, and no longer productive of the emotions of love or tenderness, nor the perceptions of duty and mutual obligation.

Whence comes this dire infliction? Is it, as some well meaning theologians would persuade us, a chastisement on sinful man by the

offended deity? If so, the awful penalty decreed in the law from the mount is here literally fulfilled—the sins of the fathers being visited on the children unto the third and fourth generation. But while we admit that every deviation from the natural law, that is, from those eternal principles of right, by which it was primarily decreed that man, both in his physical and moral nature, should be governed, brings with it necessarily and unavoidably its punishment; we are not called upon either as physiologists or as christians to believe that the penalty paid by individual suffering is an evidence of the immediate and direct vengeance of an angry creator. He is omnipresent and omnificient; not by special interference, but by the operation of those laws, to which he has willed that all created things shall, by their very nature, be subjected. In unorganized matter we are sensible of these being laws in full force in the phenomena of attraction, and the play of chemical affinities. In organized matter endowed with life, they are displayed in the phenomena of function. Since, therefore, we do not see in the convulsions of inanimate nature denominated earthquakes, volcanic eruptions, and tornadoes, a present miracle, nor the direct and visible interposition of the deity; why should we be called upon to acknowledge a supernatural agency in the violent and fatal changes to which living beings, especially those of our own species are subjected. It is not for us to pretend to expound the purposes of an all-seeing providence in these dire calamities. They are beyond our ken; nor is the question necessarily connected with our investigations, as finite beings, into the material cause and means of prevention and cure of physical and moral ills.

Insanity is not an evidence of any new principle or mysterious agency: it is a deviation from the usual order in which mental phenomena are usually presented to us, and is but an evidence of the changes in the combination of the elements and parts of the structure by which mind is manifested. Our inquiries into mental aberration can, therefore, only be predicated of a knowledge of the circumstances under which its common and sane operations are carried on.

Now experience teaches us, by the lights of anatomy and physiology, that a peculiarly organized structure, called brain, is the necessary material instrument for the performance of all the operations of the mind. This is a proposition so clear and definite, and corroborated by such a mass of demonstrative evidence, that it cannot be

destroyed or obscured by the most ingenious sophistry or the cloudiest mystification. The conditions for the performance of the functions of the brain are the same as of every other organic apparatus of the animal economy, viz. integrity of structure, and suitable force and variety of impressions. Either of these conditions wanting, there ensues disturbed function. As a corollary it follows, that the susceptibility of a part to be disturbed in its function will be in the ratio of its liability to be altered in its intimate structure, and of the number and variety of impressions made on, that is to say, of stimuli applied to it. The brain happily, is not of such a tissue as to be readily disorganized: but it is the recipient and centre of every stimulation of the internal organs and external senses.

Connected with all parts of the body by a nervous chain consisting of the spinal marrow with its proper or lateral, and anterior or visceral nerves, the brain cannot fail to be impressed by the stimulus applied to any surface, whether internal or external. If the senses so called, and the respiratory and digestive ones be over excited, the brain receives the morbid impression by means of the nerves inserted in its lower portion or basis. Excessive calls on general sensibility and muscular movement are transmitted through the medium of the lateral or proper nerves of the spinal cord, which is itself directly continuous with the brain; whilst the changes taking place in the organs of assimilation—those subservient to the nutrition of the body—produce their effects through the channel of the great sympathetic, which, uniting all the organs of the chest and abdomen in the bonds of sympathy, is connected at intervals with the anterior part of the spinal marrow. This last division of radiated stimuli to the brain is not in common perceptible, otherwise than in confused sensations, the origin of which is, however, placed beyond all doubt in the hurried and violent changes of disease.

In addition to all these sources of stimulation of the brain, there is another, of a still more direct and potential character, in the blood sent to it from the heart. The supply of this fluid may be either in excess or defect, and prove the cause of disturbance, in the first case, by its rapid and unequal distribution or accumulation beyond just measure; and, in the second, by failing to furnish the necessary nutriment for the vigorous exercise of the cerebral as of all other organs of the body.

The quality of the blood circulating through the brain is another exceedingly important consideration for a right understanding of the

functions of this organ. Hence we find them to be greatly modified according to the extent of the changes induced in this fluid by respiration; being of increased vigour from a supply of florid red, arterial blood, and slow and torpid if it be of a dark and venous nature. The immediate effects on the brain and mind of the inspiration of any of the deleterious gases fully illustrate this principle.

From this brief physiological proem we clearly infer, that whatever change, by excited or abnormal action, takes place on any part of the body, whether it be of sensation or motion, or nutrition, it is promptly felt in the brain. When now we come to consider the immense variety and intensity of appeals to the different external senses, the singular and often monstrous methods by which the grosser appetites are incessantly gratified, the irregularity and violence of muscular movement, in fine, the excessive excitement of all the organs of the body, our wonder is not so much that the brain receives such frequent shocks from remote parts, but that it is not a still greater sufferer.

Hitherto we have spoken of the organized mass within the cranium under the familiar name of brain, and as an unit; but in accordance with the more enlarged and accurate views of the physiologists of the present day, we must now state that it is not so much one organ as a congeries of organs, each of which, though sympathizing intimately with the others contiguous to it, has, nevertheless, its separate functions and distinct relations with other parts of the body. The medulla oblongata presides more immediately over the instinctive wants of the animal, as manifested through the different senses, and respiration and digestion. The quadrigeminal bodies govern the sense of vision. The cerebellum regulates the generative organs: it is by some thought to be also an exciter of the limbs, and more especially of the pelvic members, and to give them ability to a progressive movement, as in jumping. The optic beds convey the power of motion to the upper extremities, whilst the striated bodies are exciters of the lower ones. The hemispheres of the cerebrum are the special organs of the mind.

Here then are several classes of functions performed by the encephalon: some, as of nutrition, motion and general sensation, common to it and the spinal marrow; others, as of the particular senses, including the respiratory and digestive, and those of the mind, peculiar to it alone. This difference of function, according to the part of the encephalic mass excited, will prepare us for witnessing the great

varieties in the extent of mental disturbance in what are called cerebral diseases. Thus the phenomena of epilepsy or apoplexy will vary according as the basis and the middle or upper lobes of the cerebrum are lesed; that is, according as the extent of the morbid alteration of the intellectual organs coincides with the changes in the parts which give general sensibility and locomotive power. The facts furnished by this method of inquiry, enable us also to detect the fallacy of those opinions which would inculcate that there is no necessary dependence between the brain and mind; because the former has been often found altered in structure after death, whilst the latter seemed to have been exhibited in its wonted vigour during life. The holders of such a creed were ignorant of the plurality of the cerebral organs and of the different functions which they affect.

But we have yet a step farther to take preparatory to our investigating the aberrations of thought and sentiment in insanity. It is to see whether there be not particular portions of the cerebral hemispheres destined for the performance of special functions—a difference in organic development corresponding with and accounting for innate differences of disposition, and aptitude for making intellectual effort and acquiring intellectual excellence. A similar course of experimental observation and induction to that which has been received as legitimate in the establishment of other points in physiology, justifies our admitting the affirmative of this proposition. The intellectual and affective faculties are each of them manifested by means of particular regions of the cerebral hemispheres; and each faculty again requires and possesses a subdivision of cerebral organization. The education of these faculties is not, we know by the concurrent testimony of all ages, to be attempted in the same way; nor are they strengthened simultaneously by similar means. Neither the extraordinary activity of an intellectual faculty nor the inordinate force of an affective one, affords an index, in the first case, of universal genius, nor in the latter of depravation of all the sentiments of our nature. The reason of these differences in mental capabilities is found in the difference in the cerebral organization or instruments of mind as pointed out by comparative physiology, and an attentive observation of the variety in the cerebral developments of the individuals composing our own species.

In the preceding remarks we have supplied what we conceive to be an omission on the part of the author, whose work we now pro-

ceed to examine. Had Dr Burrows laid down some clear physiological principles as the first of his Commentaries on Insanity, he would, we think, have been prevented from being occasionally in contradiction with himself in regard to argument, and have given a closer and more succinct narrative of facts than he has been pleased to favour us with. His readers would have understood both him and his subject better, and been saved a certain feeling of weariness at going over what, after all, must seem to them to be a transcript from his common place book, rather than a digest and arrangement of the existing knowledge of the nature and treatment of insanity.

As an instance of physiological vagueness, we give the following sentence from his introduction. "That the operations of the mind are wonderfully influenced by our corporeal movements cannot be doubted; and that the influence is reciprocal, so that when the former are disturbed the latter sympathise, is clear." As if the brain, the necessary instrument for performing the operations of the mind, were not itself a corporeal organ, and its action or function a corporeal movement. It is the more to be regretted that Dr Burrows gives into this mysticism towards the conclusion of a very sensible introduction, in which his object seems to have been to expose the obscurities in which the study of insanity has been involved by the vague metaphysics of the schools.

We do not express our regret without cause at the want of proper arrangement of the "Commentaries on Insanity." The author does indeed begin his inquiry by discussing the nature of causes, but he does not go sufficiently far back. The very first point on which, in this as in all other diseases, the physician desires to obtain correct information, is the extent of hereditary predisposition on the part of the patient. Now Dr Burrows postpones this question to the fourth commentary, making it come after Moral Causes, and Religion in reference to Insanity: and placing it in the second division of physical causes, of which "Physiological and Pathological Observations" constitute the first. Nor is he very happy in conveying to us any very clear notion of what is to be understood by hereditary predisposition. He says, "in certain constitutions peculiar modifications exist which are termed idiosyncrasies," instances of which he then furnishes, adding that these idiosyncrasies may descend through successive generations. Continuing his remarks he tells us, that "the gout is the inheritance of one, phthisis of another, apoplexy of a third, scrofula of a fourth, and so on; and these likewise may be

propagated. All these peculiarities are predispositions." Here then, peculiar modifications are idiosyncrasies, which are transmissible; as gout, phthisis, &c., which are peculiarities; and these again are predispositions. All this partakes more of the nature of loose memoranda than of thought and reflexion: it may be passable in one's own common place book, but is hardly fit to be placed before the public eye. We believe that, of two persons with hereditary predispositions to the gout, one may have an idiosyncrasy, by which he abhors certain fruits or fish, which the other takes with great pleasure. The one, pending an attack of the disease, will have his pains greatly mitigated by the administration of opium; the other, from idiosyncrasy, cannot tolerate it in any form. Idiosyncrasy is therefore far from being identical with, or even bearing a close semblance to hereditary predisposition. The former is usually marked by peculiar and often unaccountable tastes and aversions, but which do not indicate a tendency to any particular disease; nor is it hereditary: the latter may allow of every gratification and variety of impression as far as the mere taste is concerned, but gives a proneness to one particular form of disease over every other. Again, a man, in consequence of idiosyncrasy, dislikes to eat an egg, for instance; or if he do so, it produces great pain and general uneasiness, which subside as soon as the offending matter is expelled from the alimentary canal. Another person will eat an egg with great relish, but after doing so will be seized with a fit of gout, to which he was hereditarily predisposed. A predisposition is both hereditary and acquired, and consists in the excessive susceptibility of an organ or apparatus to become diseased. Idiosyncrasy is always connate, and in it the excitability of an organ is not to every stimulus which is applied, but to some particular one, the effects of which *à priori* we should never have suspected.

Temperament, which is the expression to designate the predominance of particular organic systems, as of the sanguineous, nervous, lymphatic, &c. while it conveys the idea of a general predisposition in these systems respectively to be affected by stimuli and to take on disease, does not however give the measure of the predisposition of a particular organ. We can say in advance that a person of a sanguine temperament will be liable to a different series of morbid actions from one of a lymphatic temperament: but in both the brain or the liver, for example, may be prone to take on disease, in virtue of hereditary predisposition, depending on transmitted peculiarity of

structural condition. Even the nervous temperament does not exhibit the characters, by which we can predict a greater tendency than usual to cerebral disturbance or insanity. Hence in our inquiries into hereditary predisposition, we must not look for its evidences in the general habit of body, but rather in the susceptibility of the particular organ. Of this last we can judge, partly by certain physiognomonical characters, and partly by the phenomena evinced in the discharge of the functions, and when the organ is under the influence of its appropriate stimuli. Thus, if we see a young person with a narrow chest and projecting shoulders, and inclined to stoop, and who readily coughs after muscular exertion by which the blood is accelerated in its passage through the lungs, or after any slight changes of temperature or atmospherical pressure, we infer that such a person is predisposed to pulmonary consumption. So we argue from the complexion, colour of the hair, and readiness with which glandular swellings are brought on by a cold and damp air, and irregularities in diet, that the individual so circumstanced is prone to scrofula. In both cases the risk of disease is greater, if the parents of these persons respectively have had consumption or scrofula. Hereditary predisposition to a disease is, after all, but the possession of an organization similar to that of the parent, and liability to the like aberration of function from excess of appropriate stimuli. Our fears are always proportioned to the resemblance in this respect which the offspring bear to the parent; and of course, the danger of transmission to the child is increased, if both father and mother have the same morbid peculiarities. Hence we find that a disease, whether it be scrofula, consumption, gout, cretinism, or insanity, may be perpetuated ad infinitum by intermarriage, or, according to the homely phrase of cattle breeders, as repeated by Dr Burrows, by breeding *in and in*.

We are not allowed to doubt of the brain being the part either imperfectly developed or morbidly excitable in a predisposition to insanity. Since the healthy functions of the brain require for their performance an organized material structure, the predisposition to diseased function must necessarily be sought for in vices of this structure, or in some deviation from its customary and average condition. This is the real question which we had a right to expect would have been stated and met by Dr Burrows, in his commentary on hereditary predisposition. We do not, at all events, well see how it can be placed under the head of physical causes, in the

first division of which the author gives it a place. These, to our mind, convey the idea of the agents in external nature by which we are surrounded, and to the operation of which we are perpetually subjected—such are the *circumfusa*, or the various states of the atmosphere; the *ingesta*, or matters taken into the body for nutriment; the *applicata*, or substances applied to the surface for the purposes of clothing and protection from the elements, and for the enjoyments of the luxuries of bathing and frictions. But the direct agency of the brain or the sympathetic influence of the stomach, intestines, and liver, and heart, ought not to be enumerated as physical causes of insanity. These latter are extremely rare. The cases of the disease produced by blows, falls, sun stroke, undue compression and electricity, or other atmospherical states and extremes, true physical causes, bear but a very small proportion in number to those caused by the deranged physiological action of the organs.

Dr Burrows, in the commentary, to the title of which we have just stated our objections, lays down very properly the position, that the functions of the brain "appear to be subjected to the same general laws as the functions of other organs." He admits that the integrity of the brain, as the organ of what he is pleased to call the nervous system, is quite essential to the sound exercise of the external senses, of the feelings and voluntary powers: but he thinks that, as the organ of the intellectual functions, its integrity is not essential to their exercise. The brain—the organ of the nervous system! What singularly loose phraseology to substitute the term system, drawn from general anatomy, for function. But, waving this error of language, we have to reproach Dr Burrows for confounding together different functions, and speaking of them as all performed by a unit structure. The portion of the brain which gives the intellectual functions is not necessary to the exercise of the senses, feelings and voluntary powers; nor, *e converso*, is the part on which these latter depend required for the exercise of the former. Of course, while we are aware that extensive injuries of the brain have not been always attended by derangement of intellect, we are not by any means bound to admit that lesions of that part of it destined specifically for the performance of the mental functions can be injured without these latter suffering. Certainly Dr Burrows has heard of, or perchance seen, acephalous fœtuses with all the senses entire. He must be aware of the conservation of these senses in animals after the ablation of greater part of the

cerebral hemispheres. He cannot be ignorant of the very different series of symptoms, as regards disturbance of the senses and the intellect, in arachnitis or encephalitis, according as the upper surface of the brain or its basis is interested in the disease.

At each step of our advance we become sensible of the serious omission by the author of a clear and succinct history of the encephalic functions. It is not enough to tell us what was the theory of WILLIS, and the physiological scepticism of FERRIAR, or the various methods practised by anatomists for dissecting the brain. Dr BURROWS ought to have brought to bear on his subject the large mass of experimental and pathological observations which within these few years have thrown so much light on the heretofore obscure offices performed by the several portions of the encephalo-spinal axis. He would not, in this case, have said, in reference to the opinions held by GALL and SPURZHEIM, that "the cranioscopal system seems founded on GALEN's idea of the brain, amplified and extended by a fertile imagination." He might, as a man of letters, have known that this system was not denominated phrenology by Mr G. COMBE of Edinburgh, until after the appearance of SPURZHEIM's work, bearing this very title*. We are unable to see the force of his interrogatory, which he proposes as the solution of a difficulty started by the phrenologists. "But can any comparison," says Dr B., "be endured between the divine immaterial functions of the brain and the palpable material functions of other parts of the human body?" The anecdote told in a note, and beginning "When Dr GALL was in this country," (England) may be reasonably doubted, until the narrator will take the trouble of telling us *when* Dr GALL was in England.

The main question again recurs. Is there any peculiarity in the brain, either as regards intimate structure or development, of which we can predicate a belief of a predisposition to insanity?

That a deficient development, as when the anterior portion of the cerebral hemispheres is nearly wanting, is a cause of connate deficiency of intellect, or idiocy, is a familiar fact: and that a morbid growth of these cerebral regions, as in the scrofulous diathesis, though at first productive of mental activity, is, when it persists, attended by enfeebled mental functions, is also well known. We may, independent of other modes of demonstration, safely be allowed

* Observations sur la Phrænologie. Paris, 1818.

to infer that if the faculties are wanting, or at their minimum of activity in consequence of defective development of the organ and are enfeebled by its morbid growth, their irregular and unequal display, constituting mental aberration, must be necessarily the result of some alteration or lesion of the intimate structure of the organ. It is a pathological deduction following irresistibly from the physiological premises. It does not, however, by any means follow that there is a formation and peculiar organization of brain indicative and causative of insanity. This would be saying that the faculties of the mind are a unit in health, and affected in a uniform and invariable manner in disease; whereas, we know that, as they are numerous and independent of each other in the former state, so may one of them alone be so disturbed as to constitute mental aberration, and without of course there being any lesion or alteration in the cerebrum, except in the minute portion destined for the performance of this particular faculty. An oversight of this fact led PINEL into the error of supposing that he had confuted GALL and SPURZHEIM, when he showed, by the measurements and proportionate developments of a large number of heads, that there was no characteristic cerebral or cranial configuration indicative of predisposition to insanity. But the real question is, whether the faculties of the mind, so numerous and diversified as we know them to be, have not each a specific allotment of a portion of the cerebrum as a necessary material instrument, on the integrity of which depends its soundness? This is declared for affirmatively by the phrenologists. Dr BURROWS takes the opposite ground; but, in place of vague reasoning against their belief, he might, we should think, have given us the results of his own experience in this highly important particular. He fails to do so in a single instance, and cannot in consequence be cited by those who come after him as any authority in this vexed question. Had he studied the work of the learned Florentine physician CHIARUGI, he would probably, encouraged by such a precedent, have given us a commentary of a more practical and strictly philosophic bearing than that which elicits our present strictures. He would have seen something else in the cranioscopal system than its seeming foundation "on GALEN's idea of the brain, amplified and extended by a fertile imagination." After speaking of the difference in the activity of the brain during the sleeping and waking states, CHIARUGI* points out the greater degree of susceptibility

* Sulla Pazzia, 2nda Ediz. Firenze. 1808.

possessed by one part of this organ over another. When the individual is about falling asleep or awaking, the portion of the brain, connected with the sense of sight for example, becomes quiescent before that of the other which is in connexion with hearing, and so on of other portions. He explains the occurrence of dreams, which he says are but temporary deliria, by supposing that a particular part of the cerebral structure is in a state of re-action under external impressions, and he might have added of visceral stimulation, whereby a train of ideas often irregular and extravagant is formed, without its being possible for them to acquire support and consistency from the rest of the brain which is still in the collapse of true sleep. If all parts of the brain be equally fatigued and quiescent, the individual enjoys sound sleep, and either does not dream at all, or has only a faint recollection of some confused sensations. So when the brain, during the waking state, has its due susceptibility throughout to impressions, the operations of the mind are regular and consistent; but if there be inequality in the former condition there ensues disturbance in the latter, such as delirium and insanity. But the inequalities in the susceptibility of the brain may result either from deficiency of organization or differences of intimate structure among its several parts. One or other of these two conditions constitutes the proximate cause of insanity; and it is their inheritance which gives rise to hereditary predisposition. Both may be regarded as congenital, and opposed to the common and adventitious changes taking place in the brain, whether from excessive functional exercise or transmitted irritation.

The congenital deficiency of intellect constituting idiocy is characterized by an extraordinary formation of head; usually an evident depression or flattening, and narrowness of the cranium at its anterior part, and correspondent absence of cerebral structure beneath. Chiarugi, in the work already cited, Vol. I. p. 80, says, that agreeably to the larger number of observations, those persons are most disposed to insanity the surface of whose cranium exhibits extraordinary inequalities; since for every elevation and depression of bone there is a corresponding excess or deficiency of brain, and hence it is not surprising that an individual so circumstanced should differ from others in the enjoyment of the mental functions, either as regards their power or weakness. This author, after next stating some objection to the cranioscopal part of Gall's system, and admitting that some men with notable depressions of a part of the

skull have displayed sound minds and right judgment, avers, as the result of numerous observations which he has made, that congenital depressions in the central part of the frontal bone and at the anterior angles of the corresponding parietals, enfeeble and even destroy the imaginative power. Many crazed persons from birth, exhibited no other change than a notable flattening of the posterior part of the occipital bone or of one side of the cranium. A cranium entirely disproportioned by its smallness to the rest of the body, flattened at the vertex and temples, or even at the occipital protuberance is commonly met with in the Cretins of Switzerland, who are congenital idiots; and for this very reason incapable of cure.

There is a conformation of head which must have frequently been presented to hospital physicians, and the peculiarity of which has probably led to the same conclusions in all. It consists in a large circumference at the base, going from the supra-orbitar region round in a line behind the ears to the lower part of the occipital bone; with a retreating and narrow forehead and some flattening of the parietals: the elevation of the head is generally inconsiderable. The expression of countenance of the persons with this imperfect cerebral development, would of itself sufficiently indicate their limited mental endowments. Easily led by those around them, they often give into habits of intemperance, become victims to epilepsy, and end their days in an alms-house, in a state of fatuity.

Morbid development of the brain, like hypertrophy of any other organ, is incompatible with the regular and equable performance of its functions. Though this is rarely a congenital state, we are justified in considering a very voluminous brain in a sanguineo-lymphatic temperament (especially if these particulars distinguished the parent) and with evidences of a scrofulous diathesis as predisposing hereditarily to mental derangement. Individuals thus organized usually display great precocity of intellect; but in proportion as the growth of the brain becomes so rapid as evidently to be a part of the scrofulous disease which affects at the same time the bones and joints, there is exhaustion of mental powers running into idiocy, or, if the subject have arrived at the ages of adolescence and manhood, he is seized with insanity. Dr Burrows avers, that "scrofula frequently extends to the brain and then incurable insanity commonly follows."

It will not we think, after what has been laid before our readers, be deemed a forced inference to believe, since a deficiency of certain portions of the cerebral mass is the cause of mental imbecility;

and a morbid growth of the entire brain is at first productive of mental excitation followed by feebleness, that an unusual development of one part of the brain over another will be accompanied by partial energy of mental manifestation and tendency to disease of a specific function. Illustrative of this point is the remark of CHIARUGI*, that as insanity is often seen to prevail through whole families and even observed to extend to several generations, it is also unquestionably true that a similar conformation of brain is at times observed between parent and children. It is very natural to suppose that, even where the excessive excitement of a particular part of the brain is not kept up by continued indulgence of its corresponding faculty, this latter may still fall into disease, as a consequence of transmitted irritation from other internal organs, which, *cæteris paribus*, will be most felt by that portion of the brain most developed.

Certain it is that where some feelings of the mind are very active, the individuals possessing and indulging them are apt to become insane in these feelings; just as great geniuses are liable to insanity from excessive activity and indulgence of their distinguishing intellectual faculty. Now as the disturbance in either case is to be sought for in the brain, and not in all parts of it indiscriminately, we are allowed to believe that attentive examination would point out its cause in the undue development of a particular part. The question is not one of mere speculation: it is worthy of being tested by experimental observations attentively made and greatly multiplied. ESQUIROL is among the few who has taken any pains on this subject: he has made a large collection of skulls and casts of the heads of insane persons. In reply to the insinuation that these are adverse to the phrenological opinions of GALL and SPURZHEIM, as above adverted to, the latter assures us that both his colleague and himself had carefully inspected this collection, and found nothing in it incompatible with the principles which he was inculcating in his work†. Nature is not in contradiction with herself in different hospitals; and whoever, continues SPURZHEIM, is desirous of disproving our observations must not do it by gratuitous suppositions of his own.

Another cause of hereditary predisposition in the brain to be disordered in function which shall end in insanity, will be found in its

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* Op. Cit. Vol. I. p. 69, 70.

† On Insanity. We borrow at this moment from the French copy "*Sur la Folie.*" Paris, 1818.

intimate structure in regard to laxity or firmness of fibre. Varieties in this respect, must, by the analogies of the functional exercise of all the other organs of the body, be attended with marked effect in that of the brain. In the absence of direct external evidences of this state in the cerebral structure itself, we must look to those of an indirect nature, furnished by the rest of the body; as where we find predisposition to general dropsical effusion, or a scrofulous or gouty diathesis. The impressibility of the external senses or the extra-cranial nervous apparatus, will also serve to guide us in our inquiry into that of the internal cerebral senses, or the intra-cranial nervous apparatus.

If with a similar cerebral configuration the offspring inherit the temperament of the insane parent, so as to induce us to believe in the similarity of nervous fibre in the two cases, we cannot hesitate to affirm, that the predisposition to insanity is much increased, and requires but slight exciting causes to call it into full display.

The importance of ascertaining the force of hereditary predisposition by means of external, palpable, and evident signs, in order the more carefully and persistently to withhold all the occasional or exciting causes, must plead our justification for attempting to fill up the omissions of Dr Burrows in this respect. Reinforced by such knowledge, we might go a step farther, and not merely rest satisfied in withholding noxious causes, but more carefully educate opposing predispositions, or faculties of a tendency adverse to those, whose diseases we have most to fear. The author himself gives us argument for the urgency of our duty in this particular, when he says, "I have seen several instances of insanity developed at the early age of thirteen and fourteen, where there was no possible exciting cause but constitutional predisposition." Here, however, we must suppose Dr B. to have meant to say, no *known* possible exciting cause. As to the actual possibility, can we not conceive of it in the particular states of the cerebral functions themselves, as of anxious fear, or envy, or of the prematurely excited state, by unnatural means, of the genital organs, or of the not very evident irritation of the intestinal canal, or suppressed excretions, as of sweat.

Constitutional predisposition cannot be, as the author would intimate, an exciting cause, any more than inclination in morals can ever be deemed action. If it were otherwise we should be forced to believe, that the conditions being the same from birth, the coming on of insanity is purely accidental and without cause. He goes on

to say, "Derangement of the mental faculties is not to be expected before those faculties are sufficiently developed, which synthetically constitute a perfect mind; but if deranged as soon as the mind has attained perfection, and without any exciting moral or physical cause, a pure hereditary origin is strongly indicated." Nothing but the most lamentable oversight of the physiology of the brain, the only foundation of a rational system of mental philosophy, could have betrayed Dr B. into such vagueness of expressions and erroneous opinions. What a singular time to propose to his readers as that in which the mental faculties become deranged—"as soon as the mind has attained perfection!" If we are to understand, and there is no alternative, by development of the mental faculties, an increase and variety of power consequent on the growth and vigour of the brain, we can then conceive how a later evolution of some parts of this organ may bring fresh excitement to its former functional efforts, and so far disturb the former balance as to cause insanity. But in this view of the subject we cannot deny the existence of a physical cause, viz. augmented development of a particular part of the brain; nor of a moral cause, in the augmented energy of function, whether of sentiment or intellect of this part.

The early evidences of hereditary predisposition to insanity, are often seen in what are called eccentricities of opinion and conduct. "There must," says Dr Burrows, "be some obliquity in the perception and judgment of such persons, for they certainly do not perceive the difference between themselves and the commonalty. Many of these eccentricities or singularities, however, if unnoticed and unchecked, grow stronger with time and ripen into perfect insanity." What a momentous lesson is here indirectly addressed to blindly indulgent parents, and negligent guardians and friends. The danger from hereditary predisposition is greater, says Esquirol, in proportion as the vicious disposition is less repressed at an early period. This physician, by close attention to the external signs manifested in the look, gestures and conduct, foretold the coming on of the disease two years before its actual invasion.

Spurzheim, with great probability of truth, thinks that insanity is of rare occurrence in children, on account of their very delicate cerebral organization, which prevents its inducing a violent disease, without the entire loss of the faculties of the mind or danger of death. The cerebral affections of infantile subjects always appear under the form of acute disease, promptly altering the organization;

and are accompanied by fever, delirium, or a total suppression of all the moral and intellectual faculties. In proportion as the brain becomes firmer in structure, it bears for a longer time continued morbid impressions, without an entire obliteration of function in death. The effects of protracted stimulation are partial functional derangement, or insanity.

Of the influence of hereditary predisposition in rendering persons liable to insanity, we may form some idea from the melancholy experience of Dr Burrows. He clearly ascertained that this condition existed in six-sevenths of the whole of his patients.

Hereditary insanity is more common among the higher than the lower ranks, on account of the former individuals more frequently intermarrying. The smaller the circle of alliances, the more the tendency to insanity is increased; hence the frequency of the disease among royal and crowned personages, and the members of a particular family who, for the preservation of wealth, or to keep up aristocratic title and influence, contract marriage with each other. Examples are numerous, according to Dr Burrows, in ancient Scottish families, and insanity is more common in Scotland than in any other country. So likewise, he continues, in all nations or sects, whose civil or religious institutes enforce intermarriage. The Jews have preserved themselves most free from intermixture with strangers, and are in consequence, most subject to become victims of insanity. One of the youngest insane patients that the author ever had under his care belonged to a respectable Jewish family: his father and mother were insane, and his six brothers and sisters became like himself deranged as they arrived at the age of puberty. Insanity among the Society of Friends, who usually intermarry in their own fraternity, is very prevalent.

Esquirol, in his lectures, used to relate numerous examples of the prevalence of insanity in particular families, as illustrative of hereditary predisposition. A family near Nantz, consisting of seven persons, were all insane. Another, in Brittany, were in the same state. Sometimes the insane in the same family sink under the same diseases as dropsy. He asserts that the frequency of transmission is a third greater by the mother than by the father; and that the character of the delirium is transmitted from generation to generation. Dr Burrows avers, however, that one type only of mental derangement can be said to propagate itself: the propensity to suicide often preserves a marked singleness of character through succes-

sive generations and large families. Esquirol cites the case of six persons of a family, all of whom, except one, destroyed themselves.

It is hardly necessary to add, that the chances of inheritance of this insane, as well as of any other morbid predisposition, are increased by both parents having been subject to insanity; and what may also be understood without our expressly stating it, hereditary predisposition does not necessarily imply the evolution of insanity throughout a long life. The danger in such a case is, however, greater, and the rules of hygieine and the maxims of morality and religion ought to be more rigidly observed than usual.

It is stated by Dr Burrows, as the natural converse of what we have just laid down respecting the propagation of the disease, that "insanity, doubtless, may be so modified by intermarriages with stocks exempt from it, that progressively it wears out; otherwise all the world, ere now, would have become mad." The application of these important truths may and ought to be frequently made in forming alliances; but while it is a duty of the physician to enlighten his friends and patients on this topic, he must beware how he indiscreetly or unnecessarily enforces it, so as to give causeless alarm, and wound the feelings of the parties concerned.

It is generally admitted, as well by the author of the work before us, as by Esquirol, and many other highly respectable authorities, that one generation in a family may escape insanity, and yet their immediate descendants be afflicted with it, in a manner similar to that under which their progenitors had suffered.

The opinion of Dr Burrows, that hereditary insanity may be as successfully treated as when it arises from an accidental cause, is not, we believe, sustained by the experience of his contemporaries, or of preceding physicians. He complains, in this part of his subject, of the studied silence preserved by the other members of the family of a person insane by inheritance: they not only often conceal, but actually deny that the patient has any predisposition to the disease. He also states, and we fear too truly, that a knowledge or suspicion of such inheritance, so far from inducing caution, seems to lead to more than usual indifference to prudential considerations. As far as relates to the individual himself, we cannot but regard this carelessness as effect and evidence of the incipient morbid condition of his mental faculties. The negligence of his friends is more inscrutable, unless we refer it to the fears of their wounded vanity, in acknowledging the weakness of any of their kin.

Dr BURROWS says very little of acquired predisposition. This consists in whatever habitually exercises in excess the mental faculties, or subjects them to alternations of inordinate action and entire repose. The causes of this state are a vicious education, in which the lower propensities of our nature are not checked in their dangerous exuberance, by an exercise of the more social and moral qualities; great intellectual efforts in a particular or exclusive channel, as where the attention dwells necessarily on a small number of ideas, whether they be metaphysical and speculative, scientific, religious, moral or political; hazardous undertakings of whatever nature which keep up a continual agitation and uneasiness, and which are always, whether successful or not, productive of powerful emotions; events which strongly excite public curiosity, commotions which agitate the minds and exalt the passions of a whole nation. Hence all revolutions, either political or religious, and important discoveries, have given rise to a great number of insanities*. In the Parisian establishments for the reception of the insane, it would not be difficult, says ESQUIROL, to find examples of persons who have become so after every political change or great shock of public sentiment, from the beginning of the revolution in 1789 down to the assassination of the Duke of Berry, in 1820.

After investigating the nature of predisposition, especially that of an hereditary nature, the next branch of inquiry is into those causes of insanity which consist in an excessive or irregular action of the cerebral organs. These are usually called moral causes, and are erroneously contrasted with corporeal ones: since they imply nothing more than a primary disorder of the cerebral functions; such as intellect and sentiment.

The neglect to announce this primary principle in the study of the moral causes of insanity diminishes greatly the value of Dr BURROWS's commentary on this subject, and the first in order of his work. His observations on the sentiments and passions of our nature are remarkable neither for novelty nor research.

We find considerable discrepancy of opinion to prevail respecting the influence which moral causes exert in the production of insanity. GEORGET broadly asserts that the causes which tend to derange the organization of the brain by the very exercise of its functions are the most frequent, one might say the only ones capable of producing

* Georget. *De la Folie*, p. 155. Rush. *On the Mind.*

mental alienation. The returns of this disease, as given by PINEL, ESQUIROL, TUCK, and others, confirm this view. Out of a hundred insane persons, GEORGET is convinced that ninety-five have become so from inordinate affections and moral commotions. The author of the Commentaries, extensive as he conceives the influence of moral causes to be in the production of insanity, cannot assign to it so wide a scope as the above. The majority of cases originate, he thinks, in direct physical causes, which the privations and consequent misery the poor suffer in all countries, as well as their vices, greatly multiply.

The correct solution of this question demands what few writers take the trouble of ascertaining, viz. a prior knowledge of the number and modifications of the innate faculties of the mind, and of the groups or classes into which they may be usefully cast. Of these, we may enumerate, as of a lower order, sexual and parental love, fondness for strife and battle, cunning—propensities possessed to a certain extent by the lower animals in common with man: self-esteem, love of approbation, persistency of feeling and purpose, circumspection, veneration for a Creator, belief in mysterious agencies, benevolence, ideality, are sentiments for the most part peculiar to our nature; as are the guiding faculties of intellect, by which genius soothes the senses in the creations of music, painting, sculpture and architecture, or excels in the combinations of number and forms, the memories of places and events, copiousness of language and diction, or leads away in the long chain of causation and illustrative comparison. What a list of moral causes is opened to our view in the abnormal action of these different faculties of the mind! The first evidence of cerebral irregularity is often met with in the disturbances of other viscera; and to those as physical causes is the evolution of insanity often referred. The ungovernable indulgence of particular appetites, which are often designated as causes of the malady, ought in truth, says ESQUIROL, to be considered as its first effects—as, for instance, the excessive desire for sexual indulgence and for drinking intoxicating liquors. Love crossed, or even friendships suddenly abandoned, will operate on females as causes of obstructed menstruation, which, as often long preceding the explosion of the maniacal paroxysms, may, by common observers and even careful physicians, be regarded as the physiological cause of the mental disorder. It is very doubtful whether, as Dr BURROWS would persuade us, the rich are more peculiarly

affected than the poor by moral causes—that is, by the irregular and excessive excitement of the cerebral functions. If luxury and the vices of refinement, as more peculiar to the rich, more readily disturb the nervous system, education and the check which public opinion puts on excessive indulgence in the extremes of passion, will be countervailing causes, which the naturally powerful innate affections and sentiments of the mind are not subjected to in the case of the poor. The ravings or deep melancholy of blighted love, the inflation of pride and the frivolous displays of vanity, the incoherent outpourings or mystic musings of religious enthusiasm, are as much the appanage of the insane poor as of the insane rich. Drunkenness, that vice so common to the former, is not unfrequently a habit acquired by persons in all ranks of society, from a desire to conceal from themselves ambition thwarted or the wounds of self-love.

If the sentiments of the mind be deeply interested in conjunction with great exercise of the intellectual faculties, so that two series of cerebral organs are in simultaneous excitement, the probabilities of insanity being brought on are increased. Hence the followers of certain professions, such as priests, poets, lawyers, actors, musicians, painters and sculptors are more disposed to insanity than mathematicians and the cultivators of natural history.

Many authors tell us that insanity is a disease not met with in the savage state. Rush has been cited as asserting that it is unknown among the Indians of North America; and Humboldt tells us that he never saw an instance in those of the southern continent. We are still inclined, however, to coincide in opinion with Dr Burrows on this point, when he says, "But the more remote and savage, the less likely are the natural habits to be ascertained; and hence I suspect some fallacy in this conclusion."

The passions of barbarians, he continues, are always strong and sometimes furious; and must evince that their affections are violent. Their organization is the same as the more civilized; and when such people become contaminated by association, they contract the same diseases. Why, therefore, should it be imagined that savages never go mad? He then instances the natives of Hindostan, as very prone to insanity, notwithstanding their temperate diet, and the control which they exercise over their passions. As an ancient race, however, and divided into castes, the members of each of which intermarry, hereditary predisposition must be taken into consideration. Dr James, in his account of the first expedition

under Major Long to the Rocky Mountains, says that insanity is unknown among the Indians of the Missouri. But Mr Keating, in his narrative of the second expedition of the Major to the source of the St Peter's River, mentions, among other particulars relating to the powerful tribe of Sioux or Dacotas, that hypochondriasis and suicide are very common, the latter especially so among the women. Hysteria is also known. We cannot suppose them strangers to the more marked forms of insanity, since on the authority of this last writer, they sometimes imitate the disease for the accomplishment of particular purposes.

In reference to the different emotions of the mind, as causes of insanity, Dr Burrows says that

"Joy is more likely to occasion sudden insanity than grief, because the former cannot, like the latter, find relief in tears; and tears are the natural solution of cerebral congestion and excitation.

"Sudden transitions from joy to grief occasion the greatest shock to the feelings, and produce the most durable effects on the mind."

He has met with but two instances of mental derangement from excessive joy.

"Actual losses or disappointments in pecuniary speculations do not appear to occasion insanity so frequently as unexpected or immense wealth. In the six months succeeding the extensive failures, and consequent distress, of the winter of 1825—6 in this metropolis (London), there were fewer returns of insane persons in the London district than in any corresponding period for many years past."

The effects exerted on the different viscera by particular states of the mind, that is, by the functional exercise of different parts of the brain, are stated as follows:

"Desire produces an increase of the seminal secretion; the smell, or even the expectation of savoury food, excites the salivary glands; maternal feeling, the secretion of milk; and dislike, both in the human and brute creation, prevents the flow of it; fear incites the intestines, kidneys and skin, by diarrhœa, incontinence of urine and sweat; grief, the stomach and lachrymal ducts; anger, the liver; terror, the nerves, inducing palsy; extreme hope, the respiration."

We do not approve of the explanation of the modus operandi of fear: it is not by inciting the cavities above mentioned, but by relaxing the sphincters that the evacuations are brought about. Sweat we may presume results from a similar absence of the contractility of the cutaneous tissue.

"The spontaneous separation of warts by what is termed charming them, is an instance of the influence of the mind on the body.

"The rapid change of the natural colour of the hair to white is another instance.

"Change of temperature of the body is produced by the passions: lust increases heat, aversion or fear occasions cold.

"The mental affection known as nostalgia, or an intense desire to return to one's native country, is a disease purely arising from a moral source; but it produces a positive organic lesion, for AVENBURGER says, that on dissecting the bodies of those who have died of it, the lungs are always found adhering firmly to the pleura," &c.

CORVISART, the author informs us, describes a mental affection which he terms "infant jealousy," and gives all its attendant symptoms, as witnessed by him in the case of a girl about three years old. She recovered in consequence of his discovering the real nature of the case.

The second commentary is entitled "Religion in reference to Insanity." This is in strictness but a continuation of the inquiry into the effects of moral causes. Dr BURROWS begins by very appropriately remarking that the extraneous opinions, as matters of faith, which have been introduced into this question, have very generally prevented a due investigation of its real nature; or have been the cause, to make use of his own idiom, why "due inquiry has been deterred."

"It has been with some a favourite hypothesis, that insanity frequently originates in the theological tenets peculiar to certain sects: and that persons professing a form of devotion free from controversial intricacies, and therefore such as might be comprehended by the plainest understanding, as for instance, that of the Quakers, would be entirely exonerated from this severe affliction.

"If any description of Christians could be supposed to be so favoured, well knowing that all functional derangements are principally excited by the vices and passions of mankind, we might naturally expect it would be the fraternity of Friends, since theirs is a profession of pure morality, of which their lives, commonly, present a consistent illustration. But TUKE's description of the Quakers' Retreat for Lunatics, near York, proves that such an inference is a complete sophism*. The avowal of this fact has confounded those

* "The diseases which afflict mankind are chiefly and rightly ascribed to the indulgence of vicious passions; and therefore the moralist assumes that the Quakers must be less liable to corporeal ailments. This may be true in the abstract. But as they almost always intermarry with each other, on this account the proportion of all hereditary affections, among which is insanity, will be found greater in their community than in the population at large. Mr TUKE informed me that he computed *one* in two hundred of the society of Friends became deranged."

who believed that insanity consisted in a 'mind diseased;' and has at once levelled those beautiful abstract theories in which they had indulged; and brought them to confess that between mind and matter there is a connexion and reciprocal action:

'One touch of nature makes the whole world kin.'

And although some individuals, from a more perfect organization, education, habit, or less exposure to risk, will enjoy greater freedom from disease; yet, be the precepts and practice ever so perfect, no community of persons can be exempt from the infirmities of mortality. All that can be conceded to superior morality, and of this truth I am fully persuaded, is, that the fewest lunatics in all communities will be found among the truly virtuous."

In regard to the time and mode in which religious exaltation and theological discussion give rise to insanity, Dr B. assures us that the critical period is that of doubt as to the orthodoxy of the doctrine professed, and that aberration is usually developed during the transition from their original to a new faith.

"Were I," says the author, "to allege one cause which I thought was operating with more force than another to increase the victims of insanity, I should pronounce, that it was the overweening zeal with which it is attempted to impress on youth the subtle distinctions of theology, and an unrelenting devotion to a dubious doctrine. I have seen so many melancholy cases of young and excellently disposed persons of respectable families deranged from either ill suited or ill timed religious communication, that I cannot avoid impugning such conduct as an infatuation, which, as long as persevered in, will be a fruitful source of moral evil. The old Romans knew human nature better: they had a law which forbade any person entering upon the sacerdotal office before the age of fifty. This was to prevent theological discussions before an age sufficiently mature was attained. If such studies were likely to disturb a Roman of mature age, we may judge the probable influence on a modern of fifteen or twenty. Seriously, this practice is an alarming error: it is growing to an excess fatal to the preservation of intellectual sanity, and, in a manner, especially dangerous to the rising generation."

The author enriches this commentary with the histories of cases illustrative of the correctness of the above views. Whilst however he accuses other writers with not adverting "to that particular state to which the perceptive and reasoning powers are brought, before religion ever induces derangement," he is himself, we think, amenable to a similar charge.

The different manner in which men are impressed by the mysteries and dogmas of religion, is not dependent on the mere novelty

of view inculcated, nor on the enthusiasm alone, nor on the capacity alone of the individual. The instinctive feeling of veneration for a Creator, and the sublime doctrine of religion, or an innate proneness to yield to all that is mysterious about it, constituting what some would call faith in the first case and superstition in the second, bear no assignable proportion to the intellectual faculties by which men weigh and ponder on its different bearings, like so many propositions demanded for the elucidation of a grand problem. The gloomy fanatic may be ignorant or intelligent, without the peculiar colouring of his character being essentially altered. So, on the other hand, a weak intellect may take up for a season a study of religious controversies, and then retire from it with no other particular effect than temporary fatigue from the effort. A vigorous intellect again will occasionally be found to engage in a discussion of the most profound and elaborate views, entertained on the subject in its most complex bearings, without religious insanity resulting; even though the faculties may for a time have been bewildered by their intense exercise, provided the sentiments be not morbidly excited.

The aliment, therefore, or incentive to religious travail, is in the instinctive or innate sentiment of veneration, which, if powerfully operated on, may lead to great enthusiasm and devotion to the cause; but it is only when the intellectual faculties are continually urged by it to toilsome and painful exertion of their powers that insanity is to be feared. When it does show itself, the character of the hallucination will greatly depend on the energy of the innate sentiment impelling to religious faith and adoration. Even where religion has not proved the exciting cause of mental aberration, we may be prepared for a morbid display of this sentiment, which though active before is now unrestrained by the other faculties, and riots in all its instinctive suggestions.

We might illustrate in the same way the operation of other sentiments, such as pride and vanity, on the purely intellectual faculties, impelling them to exertions far beyond their strength, and which end in insanity. The display of the sentiments alone in the common actions of life, though offensive, would never have been deemed so excessive as to be thought indicative of insanity. It is only when, for the sake of winning applause, or to gratify self love, the intellectual faculties are attempted to be tasked to the displays of real genius, for which by nature they are too feeble, that reason totters on her throne, and the mind is in a state of true derangement. PINEL, in

his most valuable work on insanity*, furnishes striking examples of the influence exerted by pride and vanity over the intellectual faculties, which we regret our want of space forbids us from transcribing on the present occasion. We wish most devoutly, that Dr Burrows had been more thoroughly imbued with the principles and knowledge displayed by this illustrious Frenchman. His work would then have been shorter indeed, but written in a terser style, and composed of more connected arguments and definite views.

It is his praise to have collected numerous facts; and the medical statistics scattered throughout the book are valuable. To these we propose adverting on a future occasion. We shall then pass in review the sympathetic irritations of the brain from disturbances of other organs, which, following the full exposition that we deemed it our duty to give of the real cause and nature of the proper functional derangements of this part, divested of mysticism and metaphysical cant, will, we hope, prepare our readers for a right understanding of the varieties of insanity, and its most appropriate moral and medical treatment.

[To be continued.]

ARTICLE XII.—*Researches into the Causes, Nature, and Treatment of the more Prevalent Diseases of India, and of Warm Climates generally. Illustrated with Cases, Post Mortem Examinations, and numerous Coloured Engravings of Morbid Structures. By* JAMES ANNESLEY, *Esq. of the Madras Medical Establishment. Late Surgeon to the Madras General Hospital, &c. Two volumes, quarto. London*, 1828. *Pp.* 1395.

The splendid work which we propose to bring under the notice of our readers in the present article, is the result of the medical observations of the author, made, during twenty-five years' practice, in almost every part of India. It is indeed a performance, highly creditable to the distinguished army physician who has given it to the world, evincing, as it does, great industry in the collection of

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* Sur l'Alienation Mentale.

facts, the habit of close observation, and the true spirit of medical philosophy.

The first volume is divided into three books, which severally treat, the first, of the digestive and assimilating functions, of the chief causes of disease in warm climates, and of the premonitory symptoms of intertropical diseases; the second, of the diseases of the stomach most prevalent in India; and the third, of the diseases of the liver and the biliary apparatus. Under the title of digestive and assimilating functions, the processes of mastication and digestion, and the functions of the liver, pancreas, spleen, and intestines, are discussed, as occurring in their healthy state, as a preliminary consideration to their pathology. The chief causes of disease in warm climates are then considered, under the several heads of soil, situation, vegetation, seasons, &c., and illustrated by a separate account of the climate of the principal districts of India. The first book then closes with an important chapter on the premonitory symptoms of intertropical diseases.

As our limits will not permit us to give a full analysis of so voluminous a work as that before us, we shall pass over this portion of the author's labours without further notice; in order that the space we have at command may be occupied with the more practical parts.

In the second book, on the diseases of the stomach most prevalent in India, the author does not profess to give a complete treatise, but to speak of "those considerations which are most important to be attended to, as respects both the nature and treatment of those ailments, and of the consequences which frequently arise out of them, more particularly under circumstances of neglect or mismanagement."

The author first considers the more frequent forms of indigestion within the tropics, and traces their origin and progress in a clear and satisfactory manner. The feeling of oppression and distention, after a full meal, which in temperate climates sometimes exists for years without giving rise to decided disease, produces, in warm climates, serious disorder in a much shorter time. The diminished action of the stomach creates a corresponding state of the bowels and liver; and hence costiveness and a torpid state of this viscus generally accompany the early symptoms of indigestion. As the disease progresses the uniform costive state is exchanged for an alternate confined and relaxed condition of the bowels. The stools are

generally dark and very offensive, and sometimes of a greenish-brown colour, and acidulous odour. Occasionally, they are pale, often clayey, and, when broken down, exhibit a variegated appearance.

The author considers it quite certain, that the biliary functions and the constitution of the bile become early disordered in the indigestion of warm climates; but he deems it by no means a fair conclusion, that the indigestion, and disorder of the liver, are in the relation of cause and effect. On the contrary, he considers it more reasonable to suppose that the peculiar morbid influence of a high temperature, indolence, excessive and improper feeding, may act contemporaneously on the stomach and liver, so as to make it impossible to decide which is the primary affection.

The alternation of a confined and relaxed state of the bowels becomes more marked as the disease advances. After a period of costiveness, of greater or less duration, the discharges will become loose and frequent, consisting almost entirely of bile, which stimulates the rectum, so as to produce smarting and tenesmus. These occurrences evidently depend, as the author justly remarks, on a reaction occurring in the liver, from the irritation of its pent-up secretions, in consequence of which they are suddenly discharged, and produce a temporary bilious diarrhœa.

The author next speaks of cases of indigestion accompanied by nausea, and makes the following remarks:—

"In those cases of indigestion which are attended with loss of appetite and occasional nausea, although the patient becomes sooner alarmed, and the pathological condition may be more important than in such cases as are attended with undue appetite and frequent craving for food, yet the disorder is often sooner removed. For where there is loss of appetite and nausea, there is usually much mental apprehension; hence the patient sooner seeks assistance, and more closely abides by the advice given him. Food, also, being but sparingly indulged in, and that which is taken under such circumstances being generally of a mild quality, the disorder is not perpetuated by indulgence in its chief cause, nor are the functions of the liver and bowels deranged by unduly concocted chyme, and by the irritating materials formed from undigested aliment. When nausea, however, is a symptom of dyspepsia, and still more especially if the nausea is productive of retching and vomiting, the practitioner should then be watchful, and take care to examine fully into the state of the patient. The pulse should receive attention; for if it be quicker than natural, independently of the influence of retch-

ing upon it; if there be pain at the stomach or right hypochondrium, either upon pressure or without it, then the following pathological states are to be dreaded,—namely, the indigestion has gone on to produce an inflammatory state of the mucous coat of the stomach, or to occasion inflammation about the concave surface of the liver, or about the duodenum, or the gall-bladder and biliary ducts. It should, however, be recollected, that sickness at stomach, with pain and accelerated pulse, may sometimes be present, without resulting from inflammation, in the situations now pointed out; for these symptoms sometimes supervene in the advanced stage of indigestion, from altered sensibility of the nerves of the stomach, independently of inflammatory action, although more frequently they proceed from this cause." Vol. I. p. 233.

In the treatment of indigestion, the first duty of the practitioner, according to Mr ANNESLEY, is to ascertain the causes, and remove as many of them as possible; after which the following indications are to be kept in view; "namely to remove the more urgent symptoms and complications which each case presents, to restore the impaired energy of the digestive functions; and to prevent a recurrence of the disorder."

No advance can be made in the cure, so long as the patient indulges in excessive quantities of rich food. A mild, low, and bland diet ought to be insisted on, as a sine qua non in the cure. The acid and acrid eructations, after eating, are often immediately removed by the adoption of a proper diet; but should this not be the case, the author recommends the use of gentle tonics, combined with antacids and aperients, and the exhibition of a pill consisting of a grain and a half of blue pill and three grains of aloes, or the aloes and myrrh pill, every night. If the liver be torpid, and the biliary apparatus loaded, and an inflamed state of the stomach be not coexistent, an emetic of ipecacuanha will be proper; as it will cause greater benefit by unloading the liver and promoting a free circulation through this viscus, than it can possibly do harm, by any inordinate impression, which it may exercise on the stomach.

So long as there is evidence of a deficient secretion of bile, a combination of blue pill and aloes, exhibited overnight, and tonics and aperients the next day, will be proper remedies, to be continued for a considerable time, or until the secretion is restored. When there is irregularity in the alvine excretions, and a morbid state of the biliary secretions, Mr A. recommends ten or fifteen grains of blue pill to be exhibited every second or third night, and an aperient draught to be taken every morning, consisting of equal parts of the

compound infusions of senna and of gentian, with a little of the compound tincture of aloes and of cardamoms. In greater derangements of the biliary apparatus, ten, fifteen, or twenty grains of calomel may be substituted for the blue pill, and a large blister applied to the region of the liver. When the liver and bowels are much disordered, the diet should consist chiefly of farinaceous substances, with little or no animal food.

As long as the secretions contained in the stools are unnatural, a mercurial pill may be given with advantage every night, and an active purging draught the following morning; and this course ought to be persisted in until all disorder ceases.

If congestion of the liver, and inflammatory irritation of the mucous surface of the stomach should supervene, the author recommends, in addition to a low and bland diet, the exhibition of enemata, and the application of leeches to the sore and tumid part. In these cases, medium doses of the blue bill at bed-time should be adopted, and gentle antimonials exhibited during the day.

For the troublesome symptoms of heartburn and acidity, Mr A. seems to prefer the carbonate of ammonia, given with the acetate, in some mild aromatic water.

After the more urgent symptoms have been removed, by unloading the bowels, and restoring the healthy action of the liver, gentle tonics will be proper, such as weak infusions of columbo root, gentian, or chamomile flowers; but, for the most part, tonics are more safely exhibited, combined or alternated with aperients. As the strength returns, cinchona, or cascarilla with soda, may be prescribed with advantage. The general rule, in regard to these articles, is, that if they create heat of skin, and accelerate the pulse, they are to be laid aside.

Mr Annesley bestows praise on the *shayraet*, (the gentiana chirayita of Roxburgh), or wormseed plant of India, as one of the best tonics that can be employed in the disease under notice, especially in weak persons; as it possesses bitter properties, without being, in any degree, heating or irritating.

After all that has been written on dyspepsia, it may be safely asserted, that the best remedies for the disease are proper food, both in quantity and quality, and regular exercise; remedies, indeed, without attention to which no others can be of any avail. In making this remark, we do not wish the inference to be drawn, that we think Mr Annesley has neglected to lay sufficient stress on these

points. On the contrary, his observations on the importance of diet and exercise show, that he considers them of indispensable importance in the cure.

The author next considers inflammations and organic lesions of the stomach. Uncomplicated gastritis is deemed by him to be a rare disease in India; it being almost uniformly complicated with disease of the liver, spleen, and small intestines. When the inflammation is seated in the mucous coat, he considers it slow and often obscure, and as occurring to a greater or less extent in the advanced stages of dyspepsia. When it proves fatal, it is by ulceration, which commences in the mucous follicles of the villous tunic. The symptoms are heartburn, gastralgia, especially after eating, with sense of constriction. Slight fever and thirst. Fauces and edges of the tongue red; its surface whitish or yellowish. Appetite variable. Digestion, slow and painful, accompanied by acrid, acid, and rancid eructations and occasionally vomiting. As the disease progresses, the appetite disappears. The bowels are often not much disturbed; sometimes slower than natural, and occasionally in a lax condition. As the disease advances to ulceration, the pain, heat and vomiting become more urgent, and the cardialgia, and constriction at the pit of the stomach, more frequent. Emaciation now occurs, and the fever assumes more of the hectic character. The vomit at first consists of the substances eaten, afterwards of glairy mucus, and finally, after ulceration has occurred, of a dark-coloured, grumous fluid. At last the vomiting invariably follows the ingestion of the least portion of food or drink, and the patient sinks under the disease.

The author next notices the post mortem appearances, which are those of the advanced stage of the disease, such as ulcerations, thinnings, thickenings, softenings, &c.; justly observing, that we seldom have it in our power to inspect the early appearances of chronic inflammation of the stomach. Next follow two cases with dissections in illustration of the views of the author, and as examples of the disease of which he speaks.

On the subject of cases, it may be proper in this place to mention, that the author has pursued a method of recording his observations by the bed-side deserving of all praise. In his preface, he states that he had regularly preserved accurate notes of the treatment of every case which fell under his care from 1811 to 1824. These records furnished him with the means of illustrating by cases the

several forms of disease of which he treats; and, accordingly, he has throughout his work concluded the description of each affection by the citation of selected cases, as examples of the morbid condition treated of, and in illustration of his pathological and therapeutical views.

Acute gastritis is next considered, and the symptoms and post mortem appearances detailed. The disease is then illustrated by a number of cases.

The author next treats of certain organic disorders of the stomach, occasionally met with in residenters in warm climates. Sometimes these appear to be the result of slow inflammation; at other times, of quite an opposite state. Thus, according to Mr A. the appearance of the stomach on dissection, in a few cases, seems to evince the previous existence of deficient vitality of the organ and diminished vascular action. This may be a fair inference respecting the state of the stomach for some time before death; but still we should be disposed to attribute the condition to an original inflammation or irritation of the viscus.

The appearances on dissection are, dilatation of the stomach and thinning of its parietes; dilatation, with flaccid and thickened coats, without any trace of recent inflammation; coats, paler, thinner, and softer than natural, without any dilatation; and ulcerations, most numerous towards the pyloric and cardiac orifices, and which seem to have commenced in the mucous follicles. The author professes himself to be in doubt whether these appearances are the result of inflammatory action; but seems to incline to the opinion, that, generally, they are unconnected with inflammation, though capable of being produced by it. Softening of the stomach, however, he admits to be more unequivocally the result of an inflammatory condition, as it is often associated with marked inflammatory appearances in some part or other of the viscus.

We transcribe the following description of further morbid appearances of the stomach, which will be recognised as faithful, by those conversant with the morbid anatomy of this viscus in fever. The explanation which the author gives of the manner in which the black matter is produced which constitutes the black vomitings in certain fevers, appears to us to be just, and coincides with the prevalent opinion amongst American pathologists, as to the source of the black vomit in yellow fever.

"The mucous coat of the stomach often presents patches of

various colours and shades, from a deep red to a violet, purple brown, or slate colour; and these are frequently elevated above the surrounding parts. This seems to have depended upon increased vascularity of the capillaries of the part, and enlargement of their diameters. More frequently these patches are situated about that part of this viscus which is covered by the spleen: sometimes they are found in other parts, and are often observed in the dissections of those who have died of remittent fever. This change has been most frequently remarked in those who have vomited during life dark brown or black grumous fluids. This appearance of the ejected matters seems to have proceeded from the exudation of blood from the capillaries of the patches now noticed, changed by its remora in the stomach, and by admixture with the various fluids and matters contained in it. When chronic inflammation of the mucous coat of the stomach has proceeded to ulceration, and when the internal surface of the scirrhous indurations of the cardia and pylorus undergo such change, a similar appearance of the matters ejected from the stomach to that described above, is usually observed. Sometimes these matters present an inky colour, and at others, a greenish-black hue. This is owing, perhaps, to the admixture of acrid and dark-coloured bile with the morbid matters flowing from the diseased surface, giving rise to a deeper colour of these fluids."

When organic diseases of the stomach already exist, very little can be hoped from medicine. But in the aggravated forms of indigestion, where the state of the mucous coat of the stomach may be considered as verging towards ulceration, art may interpose with some prospect of success. The remedies in this state of things, are leeches to the epigastrium followed by blisters; alterative doses of the milder preparations of mercury, such as the hydrargyrum cum cretâ; ipecacuanha, alone, or in the form of Dover's powder; these latter remedies to be conjoined, or given simultaneously, with carbonate of soda, extractum taraxaci, the extract of hop, or small quantities of the extractum conii or hyoscyami, according to the circumstances of each particular case. In many cases, the preparations of opium may be prescribed with advantage. The author particularly enforces the precept, that nothing can be effected without a rigid adherence to an abstemious and bland diet.

We now come to the third and most important book of Mr ANNESLEY's work, which treats of the diseases of the liver and biliary apparatus. They are considered in two chapters; the first, embracing the functional disorders of the biliary organs; the second, inflammations of the liver, and their more frequent terminations in

warm climates. The functional disorders are noticed under the heads of, 1st, increased secretion of bile; 2d, accumulation of bile in the gall-bladder or ducts; 3d, congestion of blood in the liver; and 4th, torpor of the biliary organs; forming as many distinct sections.

Increased secretion of bile.—The author combats the opinion of Dr JOHNSON, that the increased secretion of bile observed on removal from a cold or temperate climate to a warm one, is owing to the sympathy between the skin and liver; in consequence of which, the function of the former being increased, that of the latter is also augmented. We shall endeavour to explain Mr ANNESLEY's views on this point as succinctly as possible. It has been ascertained by the experiments of CRAWFORD, LAVOISIER and SEGUIN, Dr PROUT, and Dr FYFE, confirmed by Dr COPLAND in a warm climate, that the quantity of carbonic acid generated in respiration, is lessened by a high temperature. If then as much carbon is taken in with the ingesta in a warm climate as in a cold one, and less carbon eliminated in respiration, some other emunctory must be found for the discharge of the excess; otherwise this principle would become redundant. Now Mr ANNESLEY conceives that this emunctory is furnished by the liver, and that, by an increased secretion of bile, that carbon is carried off in warm climates, which is thrown off by the lungs in cold ones.

What confirms Mr ANNESLEY in the truth of this view of the subject, is, that Dr COPLAND in England, Dr PIERSON in America, and Mr DOWN, as well as himself, had arrived at the same conclusion, by a similar train of reasoning, and independently of each other.

We are free to confess that this explanation of the redundant secretion of bile in warm countries strikes us as very probable. The only doubt which arises, relates to the question whether it be true that as much carbon is received in the food in a warm climate as in a cold one; and whether, indeed, any excess exists, requiring the vicarious office of some organ for its removal. Our impression is that the carbon will be less in the ingesta, both on account of the smaller quantity of solid food taken in warm climates, and its more watery nature. Heat seems to produce an instinctive disrelish for animal food, and a desire for ripe acidulous fruits. Now, animal matter, as a general rule, contains more carbon than vegetable, and much more of this principle than the vegetable acids. In connexion with this subject, it may be remarked, that it is not reasonable to suppose that the carbon which is thrown off by the lungs in greater amount

in cold countries is something hurtful to the animal economy, which would have fared better, had it never been received. It seems much more probable, that the relish for food redundant in carbon, felt by northern nations, is a law of the economy, intended to prompt the animal to take into the system as food, a sufficient quantity of carbonaceous matter, to be burnt, as it were, in the lungs, in order to sustain the animal heat. For the change which takes place in the lungs is very analogous to the combustion of charcoal out of the body; the product being, in both cases, carbonic acid. A physical circumstance connected with the atmosphere tends to co-operate in the result, and is graduated, to a certain extent, to the ever-varying exigences of the system. Thus the colder the weather, the greater the density, cæteris paribus, of the air, the greater the quantity of oxygen introduced into the lungs in a given volume, and, in all probability, the greater the quantity of carbonic acid generated.

We, therefore, think, that the diminished quantity of carbonic acid emitted from the lungs of persons in warm climates, is owing rather to the greater rarefaction of the air, than to the reduction of the powers of life from the influence of heat, or the presence of malaria, as supposed by Mr Annesley. It is true, that it may in part be attributed to a less quantity of redundant carbon in the system to be thrown off; for it might with much probability be assumed, that, the eliminating power remaining constant, the quantity of carbon separated in respiration would be less, the smaller the redundancy of that principle in the system.

Admitting that the remarks which we have ventured to make possess any value; they are not to be viewed, strictly speaking, as contradictory to the ingenious views of the author. We expressed doubts, indeed, whether carbon was redundant in the systems of persons in warm climates, founded upon the probable adaptation of their food to the exigences of the animal economy, as modified by temperature. But this adaptation may not immediately take place in persons newly arrived in warm climates; as the influence of previous habits may be deemed far more potent than the promptings of physical instinct. Our remark, therefore, is applicable only to the natives, and those who may have wisely accommodated their diet to the new circumstances in which they have found themselves placed. Hence the fact in regard to Europeans newly arrived in India, may be strictly correct as stated by the author, that, continuing to indulge in a gross, full diet, not adapted to the circumstances of the

country, the carbonaceous element is introduced more rapidly than it can be eliminated by the lungs. The consequence is, that nature seeks some other outlet, and that outlet is the liver, operating by an increased secretion of bile.

Accumulation of bile in the gall-bladder or biliary ducts.—Mr Annesley is of opinion, "that the secreting functions of the liver may be so modified in a warm climate, that, in addition to an increase of the biliary secretion, this fluid itself may be retained and accumulated in those parts of the apparatus which admit of the retention," without its being necessary to suppose any actual obstruction of the ducts, either by calculi, or the existence of spasm. The symptoms of this functional disorder of the liver are thus enumerated by the author:

"The earliest symptoms of which the patient generally complains, are, clamminess and foulness of the mouth, fauces, and tongue, with a bitter taste, particularly in the morning; a sense of distention and weight at the epigastric region and at the præcordia, frequently with a sense of coldness and sinking in the same situations; slight anxiety; acid and acrid eructations about three or four hours after a full meal, with painful fulness at the epigastrium, and difficult digestion. The patient often complains of headach, pain in the back or loins, uneasiness under the shoulder-blades, fulness and pain in the region of the liver particularly when pressure is made at the time of his taking a full inspiration, and of aching in his knees, shoulders, and limbs; his countenance being pale, sallow, or muddy, and the conjunctivæ more or less tinged of a yellowish hue. The state of the pulse is different in different cases. It is often slow and full, and sometimes it is irregular in frequency and strength; occasionally it intermits, and not unfrequently becomes quick, but oppressed upon the least motion or exertion. The urine is generally high coloured, and depositing a brownish sediment. The stools are often costive, sometimes light, or clay-coloured, and frequently tenacious. When the accumulated bile is discharged into the alimentary canal, much constitutional disturbance then generally arises, according to the qualities which this fluid may have acquired from its retention. The pulse now becomes quick, and often irregular; vomiting and purging, with griping, pain and anxiety, often supervene, sometimes with spasms. Thirst becomes urgent, and the tongue, which was before foul, is now excited, often dry, and its papillæ large, distinct, and erect." Vol. I. p. 329.

According to various circumstances, the irruption of the bile, in these cases, when it does take place, produces, simple bilious diarrhœa; bilious or sporadic cholera; simple dysentery, or inflam-

mation of the mucous surfaces of the intestines; inflammation of the stomach, &c.

Congestion of blood in the liver.—The following symptoms of this condition of the liver are enumerated by the author:

"The symptoms marking the congestion of the liver, particularly of the portal veins, are not such as can individually be depended upon. They must be viewed in connexion, and the relations and sources of each should be duly weighed, before we decide upon the actual presence of a particular state of the vessels. When, however, the countenance is pale, anxious, inexpressive, sallow, of a dark or muddy hue; when the tongue is covered with whitish or yellowish-white fur, or otherwise loaded; when the bowels are costive, or when the stools are morbid, dark, and watery, with griping and tenesmus; when the digestion is difficult, attended with nausea, or when the appetite is diminished, and the patient complains of pain and oppression at the scrobiculus cordis, particularly after a meal, with flatulence, borborygmi, and oppressed breathing, and a difficulty of filling the lungs to their utmost; when the skin is cool, clammy, and foul, or of a dark muddy tinge, with irregular chills, sometimes approaching to rigors; when pain, fulness, weight, and oppression, are experienced in the region of the liver, and at the epigastrium, or across the shoulder blades, or beneath the scapula, and have supervened suddenly; when the uneasiness in those situations is increased upon a full pressure and full inspiration; when the pulse is full, slow, and irregular, or when it is quick, but oppressed; when there is headach, restlessness, disturbed sleep, with unpleasant dreams; and when the urine is turbid, or presenting a muddy sediment,—we may infer that congestion of the vessels of the liver is actually present." Vol. I. p. 347.

The author cautions the reader against expecting to meet with all these symptoms in the same case; and, indeed, declares that it is as much from the absence of certain symptoms, characterising other diseases of the liver, as from the symptoms present, that the physician is to form his diagnosis.

The following are the post mortem appearances in this condition of the liver, according to Mr Annesley. Size of the viscus usually much increased, particularly of the right lobe, which causes it to rise up in the direction of the right side of the thorax. Colour, variable; sometimes darker brown than natural, almost approaching to black, greenish black, or bottle green, passing in some instances, very abruptly, into reddish or light brown. Sometimes the surface is variously mottled or marbled, and, occasionally, streaked and clouded, of a yellowish-brown, greenish-black, or yellowish-green

hue. These shades are, generally, more remarkable upon the convex surface, but are observable on the concave surface also.

Torpor of the biliary organs.—Mr Annesley enumerates many causes, which he supposes to be productive of torpor of the liver. Whatever exhausts the vital energy of the biliary apparatus will give rise to this pathological state. Among the causes may be mentioned, dissipation, excesses in animal food, and highly-spiced dishes; inordinate use of spirituous and vinous liquors, and the sudden cessation of their use; indolence and neglect of exercise; inattention to the regular action of the bowels, &c.

The symptoms of torpor of the liver which most generally prevail according to Mr Annesley, are, want of appetite; drowsiness; pain over the eye-brows; lowness of spirits, and hypochondriacal feelings; dark, or high coloured urine; costiveness; pale or clayey motions; dark or sallow countenance; wasting of the flesh; slow and painful digestion; flatulency; bitter or disagreeable taste in the mouth; a loaded tongue, particularly in the morning. To this list of symptoms, it occurs to us to add, a feeling of sluggishness, or indisposition to any sort of mental or bodily exertion.

Mr Annesley speaks of the remedies for the foregoing functional disorders of the liver in the same section. This course he considered most eligible, on account of the analogies of these disorders, and to avoid repetitions. The following is a summary of his observations. When from the habits of the patient, we have reason to suspect the increased secretion and accumulation of the bile, or congestion of blood in the liver to depend upon full living, especially in new comers, venesection will be proper. In old residenters and natives, and in the less robust, local depletions by leeches will be most advisable. The other parts of the treatment, with few exceptions, should be strictly antiphlogistic. Aperients, cathartics, and purgatives are also requisite, according to the state of the bowels, to carry off their morbid contents. When from a sudden irruption of bile into the duodenum, disturbance of the system is created, attended with purging and vomiting, copious draughts of warm diluents, especially warm water, by diluting the bile and favouring its expulsion, are highly useful. If, under these circumstances, there is a bitter taste in the mouth, and no sign of active inflammation of the liver, an emetic of ipecacuanha will be proper; and its efficacy will be promoted by a liberal use of warm fluids. After the operation of the emetic is over, a full dose of calomel may

be prescribed, to remove the bile and other secretions poured into the bowels, to be assisted by jalap and supertartrate of potassa, or a weak solution of salts. In case the flow of acrid bile has produced inflammatory irritation of the mucous surface of the stomach and bowels, leeches should be applied, to be followed, if necessary, by a blister. If the discharges still continue bilious after the repeated use of purgatives, then calomel or some other mercurial preparation should be given, in full doses overnight, and an aperient draught the next morning, with a view of establishing a healthy flow of bile. If the mouth should become affected under this treatment, the healthy functions of the liver are more likely to be speedily restored.

This plan of full doses of calomel at bed-time, and aperient draughts the next morning should be persevered in, according to the author, until the motions assume a healthy aspect, and the tongue and mouth become of a natural appearance. On some occasions, mild purgatives, and even strong cathartics will not act sufficiently; and when this is the case, they should be assisted by enemata. Mr Annesley has generally found, that a large dose of calomel, followed by castor oil, or the common black draught of senna and sulphate of magnesia, and assisted by a purging enema, answered very well. The continuance of the aperients should be judged of by the character of the motions, which should be carefully and frequently examined, and not by the quantity taken, or the frequency of their exhibition.

Our readers will perceive, that Mr Annesley is not at all sparing in the exhibition of purgatives in these hepatic disorders. In justice to him it is proper, however, to state, that he is not in favour of their indiscriminate use, as the following judicious caution will show:—

"When, however, we have symptoms of inflammatory action of the mucous surface of the bowels present, we should then be extremely cautious in the exhibition of purgatives, and should assiduously endeavour to discriminate between the disordered state of bowels proceeding from inflammatory action, and that arising from the retention of disordered secretions or other matters." Vol. I. p. 385.

The remedies recommended for vascular congestion of the liver are pretty much the same as those for the state of increased secretion of bile. But as, in congestion, the condition is very prone quickly to run into inflammation and abscess, the sanguine deple-

tions, both general and local, should be pushed to a greater extent. This direction is proper without regard to the state of the pulse; for, although often slow, weak, and oppressed, it generally rises as the depletions proceed, in consequence of the load which is thus removed from the system.

The remedies for torpor of the liver, when unconnected with chronic disease of the viscus, are, in the beginning, full doses of calomel at bed-time, followed by combinations of bitters and aperients the next morning; and blisters over the epigastrium, or hypochondriac regions, repeated at intervals. Afterwards the blue pill, combined with the pil. aloët. cum myrrhâ, may be given overnight, and a bitter aperient the next morning. The author has employed in these cases, the nitro-muriatic acid internally, and externally as a wash over the hypochondriac and epigastric regions, night and morning, with the most decided advantage. He has also observed much benefit to result, after blistering, from the continued application, over the epigastrium, or right hypochondriac region, of a plaster, consisting of the emplast. picis comp. combined with an equal quantity of the emplast. hydrargyri, or emplast. ammoniaci cum hydrargyro.

We now come to the chapter which treats of inflammations of the liver. The first section is devoted to acute inflammations of the viscus. The author considers inflammation of the liver as almost invariably preceded by some one of the forms of functional derangement of the organ; and hence these latter affections are of such importance to be attended to. As a general rule, inflammatory action commences in the parenchymatous structure, and if it extend to the surfaces, it is usually in the advanced stages of the disease. Sometimes, however, the liver becomes affected from some adjoining viscus, as the stomach or duodenum; in which case, the surfaces inflame first. It often happens, in India, that the internal structure of the liver is violently inflamed, without any decided marks of inflammation in the envelope of the organ. So true is this sometimes, that abscesses of the liver break into the abdominal cavities, in default of those adhesions, the result of inflammation, which conduct the matter safely into some hollow viscus, or to the external surface.

When the morbid condition interests several structures besides the liver, it is very difficult to ascertain, from the early history of the case, in what order the morbid phenomena occurred. Post mortem examinations, the author states, may mislead us, if we are not

aware, that the last structures affected, will, in all likelihood, present the greatest deviations from the natural structure. Thus Mr A. informs us, that in India, he has met with the cases of soldiers, more especially those addicted to the use of spirituous liquors, whose disease would commence in the stomach, and proceed successively to affect the liver and the mucous surface of the intestines in the form of dysentery, the stomach being in the mean time relieved: and if death should take place, the large intestines, the last hold of the disease, will present the most remarkable appearances of disease, in which the liver will participate to a certain extent; while the stomach, the first to suffer, will present the least deviation from the natural state.

One of the greatest difficulties, with which the practitioner has to contend, is to determine the precise time, when inflammation of the liver has supervened on functional disorder of the viscus. The principal cause of this difficulty is the low degree of sensibility possessed by the internal structure of the organ.

Mr Annesley rejects the common division of inflammation of the liver, into acute when it attacks the surface, and chronic when it is seated in the parenchymatous structure of the organ. It is true, that there is less pain when the internal structure is inflamed; but, in India, when the disease is seated in that part, it is by no means necessarily chronic, in the strict sense of the term, as referring to duration; though for the most part, the inflammation has that character.

The following are the commencing symptoms of inflammation of the substance of the liver, according to the author:—Oppression, weight, and uneasiness about the pit of the stomach and right hypochondrium, increased by a full inspiration. The pulse soon becomes accelerated towards evening, being often slower and more oppressed than usual, and occasionally, irregular or remittent. Countenance, pale, sallow, or somewhat anxious; spirits, considerably depressed; tongue, yellowish-white, and more or less foul; loss of appetite, with nausea; unpleasant taste in the mouth; bowels irregular, being at first generally costive; urine, scanty, loaded, and high coloured. Sometimes there is headach, and generally disturbed sleep, and often slight dyspnœa and sighing, with oppression of the chest and epigastrium.

As the inflammation advances, the pulse becomes quicker and fuller during the evening and night. The uneasiness in the region

of the liver and epigastrium, becomes often augmented; and if the vascular fulness of the organ be great, the patient complains of a heavy dragging pain. There is often a short, suppressed cough, with shortness of breathing, and a catch in the respiration, particularly after quick motion. The easiest position is usually upon the back, or sitting gently bent forward. All these symptoms are generally increased by eating. The pain on the top of the shoulder, which is certainly characteristic of the affection, is, according to Mr A. only occasionally present; and here the inexperienced practitioner, in the absence of this symptom, is apt to conclude erroneously that the liver is sound. When the internal structure is the seat of the inflammation, the pain is seldom acute; but it is so, if the surfaces or ligaments become affected. When the right lobe is very much enlarged, it encroaches upon the cavity of the thorax, and produces symptoms which lead the inexperienced practitioner to mistake the disease for pneumonia.

If nausea and vomiting are urgent and continued, there is reason to suspect the affection of that part of the liver nearest the stomach, and the extension of considerable disorder to this viscus, the gall-bladder, and duodenum.

As the inflammation advances to its height, the febrile symptoms become more marked. The pulse is more frequent and irritated; but it varies greatly in different cases, and its indications, viewed singly, cannot be depended upon.

The countenance is at first pale or sallow, but as the inflammatory action advances, it "fills out more fully;" and when there is great fulness and oppression in the region of the liver and chest, the face often becomes fuller than natural, with some degree of dusky redness in the cheeks. The countenance and eyes, however, still possess a murky, or muddy, or sallow hue; and more or less of a dark circle surrounds the eye, particularly beneath it. Jaundice, though often associated with inflammation of the liver, in temperate climates, is, according to Mr Annesley, not a frequent concomitant of the hepatitis of India.

When the hepatitis arises without any previous functional disorder of the liver, the bowels are generally costive early in the disease. When, however, it results from a congested state of the organ, or accumulations of bile, the stools are disordered from the first, being generally irregular, foul, dark-coloured, and fetid. In this condition, the morbid biliary secretion, by its irritating action on the mu-

cous membrane of the colon and rectum, produces those more obstinate forms of dysentery, which require to be treated by depletions, purgatives, and a mercurial course.

When the surface of the liver is the seat of inflammation, the febrile signs are more prominent; the pulse is generally much accelerated and hard, and the pain in the right hypochondrium is more or less acute. There is also cough, and much increase of pain or a catch upon a full inspiration. The heat of the skin is greater, and its dryness more unnatural. The tongue is generally drier and more coated, and the thirst greater.

When the superior surface is inflamed, coagulable lymph is sometimes thrown out, and the inflammation extends to the diaphragm, producing diaphragmitis, and considerable symptomatic disease of the lungs. In these cases, the distress of the patient is often very great.

The post mortem appearances in diseases of the liver, are next noticed by the author. The pathologist has very seldom an opportunity of observing the appearance of the viscus in the earlier stages of inflammation, as the patient at this period is not generally cut off. It is only when hepatic inflammation has arisen in the advanced stages of fatal fever and dysentery, that he enjoys this advantage. The surface of the liver, in an inflamed part, is unusually vascular, and of a bright red or reddish-brown colour. Sometimes it is covered with lymph, either gelatinous, or so consistent as to glue the inflamed surface to the contiguous parts. Under the lymph, the surface of the viscus is of a deeper colour, and more vascular than natural. The parenchyma, immediately underneath, also exhibits increased vascularity, and when cut into, gives out more blood than in the natural state. The internal structure, in the early stage of the inflammation, is usually more friable and softer than natural; though occasionally, as in the more chronic cases of disease, it is firmer and denser. The surface presents various colours. "Sometimes, it is marked with red, brown, brick-coloured, greenish-brown, and even with almost black spots and streaks."

Mr Annesley has never seen a case of gangrene of the liver; and as his opportunities have been very great for observing the diseased states of this viscus, he is led to believe that the alleged cases of gangrene, related by authors, were merely a black, congested and softened state of the organ.

In the second section of the chapter on hepatic diseases, Mr Annesley treats of the more chronic inflammations of the liver, and organic diseases of the organ. The principal symptoms of chronic inflammation of the internal structure of the liver are thus enumerated by the author:

"Loss of flesh; dyspeptic symptoms, particularly slow and painful digestion, accompanied with acid and acrid eructations, flatulency, nausea and sometimes vomiting, torpid state of the bowels, or dark-coloured, offensive, slimy, greenish-coloured, tenacious, or watery and muddy motions; frequent calls to stool, and scanty and morbid state of the evacuations; dark coloured and disordered condition of the urine; distention and oppression at the epigastrium and right hypochondrium; occasional aching pain and weight in these situations; uneasiness and pain about the right shoulder, or shoulder blade; slight acceleration of the pulse towards evening, with an irritable beat, and considerable heat and restlessness through the night; burning heat of the palms of the hands and soles of the feet in the evening, and chilliness in the morning; white, foul, and excited tongue; bitter or disagreeable taste of the mouth; hardened state of the gums; sallow and tallowy appearance of the countenance, and either yellow or pearly-white colour of the eye; sickly and leucophlegmatic character of the body generally; and elevation of the shoulders." Vol. I. p. 471.

The chief organic changes met with in India, as a consequence of chronic inflammation of the liver, are, collections of matter; sometimes very minute abscesses, containing, but not completely filled with, a firm and cheesy matter of a yellowish-white colour; viscus enlarged and dense, particularly the right lobe, arising from the deposite of lymph in the interstices of the structure, sometimes mistaken for scirrhus; tubercles of various forms and textures, with and without apparent cysts; a gristly or cartilaginous hardness; rough, pale, and parboiled-like appearance (in drunkards); cheesy and tuberculated structure; spongy and less vascular condition of its internal texture; atrophy, with or without the marks of cicatrices; various colorations of the surface and substance, and adhesions of various kinds to adjoining parts.

The next section is taken up with the account of the symptoms and nature of abscess of the liver.

The signs by which the supervention of abscess of the liver is indicated, are not very decided. Rigors are seldom attendant; but more frequently, shudderings and formications. Sometimes, there is an internal sense of throbbing in the region of the liver, followed

by a broad, soft pulse, and night perspirations. These latter, indeed, with clamminess of the skin of the extremities, are among the most certain signs of the formation of matter which we possess. The next in importance are frequent cold sweats. If after decisive vascular depletion, it is found difficult to affect the system with mercury, abscess may be considered as having already formed.

When abscess has formed, the tongue is at first sometimes white, and the papillæ raised or excited; afterwards becoming of a dusky, brick-coloured redness. At other times, it is dry, coated, and of a brown tinge. "In the more chronic cases, it is often smooth, chapped, lobulated, and apparently deprived of its papillæ."

"When great mischief is going on in the liver, without any acute symptoms, the tongue is often an excellent guide, and more to be depended upon than the pulse. In many of the less acute or chronic cases of abscess, the tongue has a peculiar white appearance, with the papillæ raised or excited: it is somewhat dry, but without any coating. This is what we have called an excited tongue, because we have considered it a sign of great vascular excitement going forward in internal structures; and we have often ordered depletions from this symptom alone, the tongue becoming natural as soon as a full depletion was performed. Hence we have considered that, when this state of the tongue is observed, depletions may be directed more safely than upon the indication of any other symptom. Care should, however, be had not to confound this appearance with a white and moist condition of the tongue, or with a white, yellow, or brown crusted state of this part. The pulse, at the commencement of the formation of matter, is generally soft and full, is subject to acceleration in the evening, and, as the organic change advances, becomes more irritable, quick, and contracted." Vol. I. p. 529.

The author next makes some observations on the state of the stools in abscess of the liver; the symptoms when the abscess presses either upon the diaphragm or stomach; the positions most generally assumed by the patient; the intensity, locality and character of the pain; the manner in which the abscess breaks internally; the appearance of the liver on dissection, and lastly, the different characters of the matter. These points are all noticed in a satisfactory way; but we have not room to make extracts.

Mr Annesley next considers the treatment of inflammations of the liver, which is comprised in three sub-sections, severally devoted to the more active forms of hepatitis; to the more chronic forms of the disease; and to abscess of the organ.

The author enforces, in his opening remarks, the great importance of active measures of depletion in the threatening states of disease of the liver, before the morbid condition has proceeded to an irremediable length.

The remedies for the more active forms of hepatitis are arranged under the heads of blood-letting, general and local; mercurials, purgatives, and laxatives; other means of cure; remedies for complications.

Blood-letting, general and local.—This is considered by the author to be the most valuable remedy in hepatitis. He has occasionally had occasion to regret the omission of blood-letting; but never its employment, or the extent to which he had practised it.

In the more active forms of hepatitis, occurring in the plethoric and robust, one or two full blood-lettings should be performed; the first to be carried so far as to produce a marked effect upon the pulse, without regard to the quantity abstracted. After these depletions, increased vascular action generally returns in a few hours. When this occurs, from sixteen to thirty leeches* should be applied over the right hypochondrium and epigastrium. If the patient be robust, and not relieved in a few hours, the same number may be reapplied; and after the bleeding from the bites has been stopped by some styptic, as the muriated tincture of iron, a large hot poultice may be placed over the affected part, and frequently renewed. The advantages of poultices, insisted on by the author, are, that they remove tension and pain, promote determination to the surface, and equalize the distribution of the blood.

Sometimes from the depressed state of the pulse, the first blood-letting cannot be carried far enough before faintness is produced; and the blood drawn, exhibits a dark, thick, and oily appearance, with a glutinous state of the serum. The pulse now rises, and a second vascular depletion is called for, which is borne better than the first, and gives more relief; and the blood is now more florid, and exhibits the buffy coat for the first time, or more of this appearance than before. As long as the tongue remains excited, with pain, anxiety, and tension, local depletions should be repeated.

In many cases, the blood abstracted by the leeches, is of a dark

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* Mr Annesley has ascertained by numerous experiments, that the leeches of India abstract, on an average, an ounce and a quarter of blood, independently of what escapes after their removal.

colour, and thick consistence, sometimes with the appearance of tar. These states of the blood are supposed by the author to be characteristic of a particularly low condition of the vital energies of the system. We agree with him in this opinion, and, as connected with the subject, refer our readers to Dr PALLAS's experiments on the comparative qualities of blood drawn from the veins and capillaries, an account of which is contained in our last volume, page 220. When the blood exhibits this appearance, the author states that he has found it necessary to give diffusible stimuli, at the same time that he was practising the local abstractions of blood for the purpose of removing the vascular load by which the portal vessels seemed oppressed. This apparently inconsistent practice of employing depletions and stimuli at the same time, we are thoroughly convinced, is, in some pathological states of the system, highly necessary to be pursued.

In the less active forms of hepatitis, the sanguine depletions should be only local; and in debilitated patients, the number of leeches applied should be small, and repeated every few days. Cups should be avoided, as producing pain by their pressure. These local depletions are often necessary, when even a small loss of blood from a vein would prove detrimental.

The following remarks of the author are so well expressed, and at the same time so just that we make no apology for transcribing them.

"It may appear, perhaps, incredible to many of our readers, after having perused the observations contained in the present volume upon the habits and modes of living of many Europeans in India, that there should be still found practitioners, who espouse opinions unfavourable to the employment of vascular depletions in the hepatitis of India, and who place their sole reliance upon the use of mercury or nitric acid for the removal of the disease. Yet such is the case, although we believe that the number is daily diminishing, and that correct views are becoming very general. Many of those practitioners, however, reject depletions altogether, because they consider that the state of the patient does not admit of the institution of venesection; and as they believe that general depletion cannot be ventured upon, because of the state of the pulse and the spurious symptoms of debility present, so they overlook the fact, that, in the diseases of internal viscera particularly, local depletions may be performed, and even repeated with the best effects, when venesection would be injurious, or, at least, of doubtful advantage. They also overlook an important circumstance connected with the

state of the pulse, and of the energies of the system, frequently observed in hepatic diseases; namely, that the pulse may be weak and small, simply from congestion alone, or from this state accompanying the inflammatory action, and from the blood being determined to the internal viscera, and abstracted in an equal degree from the extremities and surface of the body; and thus, from its accumulation in these viscera, oppressing, but not altogether overwhelming, the powers of life. In almost all such cases, the pulse rises, and the energies of the frame are restored by the local depletions, even when a general depletion, in some few instances, might not be borne well by the patient. This is a point most deserving the attention of practitioners in every climate; for to reject depletion altogether, because blood-letting from the arm may not safely be ventured upon, is as illogical in reasoning, as it is most detrimental in practice." Vol. I. p. 588.

Mercurials, purgatives and laxatives.—After the first vascular depletion, Mr ANNESLEY recommends the exhibition of a full dose of calomel. This medicine, he considers as the most beneficial in inflammatory states of the system, the most active in eliciting a healthy secretion of bile, and the most efficient in dissolving that viscid and tenacious secretion which covers the mucous coat of the intestinal canal, at the commencement of nearly all the disorders affecting the organs of digestion. He generally gives it overnight, and follows it the next morning with supertartrate of potassa and jalap, castor oil, the common black draught; or, when the energies of the system are much impaired, a combination of the compound infusions of senna and of gentian, to which may be added some cathartic or laxative neutral salt, the aromatic spirit of ammonia, or sweet spirit of nitre, according to the circumstances of the case.

Mr ANNESLEY is in favour of quickly inducing ptyalism, after the mouth begins to be affected by the calomel, in twenty grain doses, and then laying the medicine aside. By this course, a powerful derivation from the liver is created to the mouth and salivary glands; whereas, if frequent doses of calomel are prescribed, as five grains every three or four hours, they often produce greater irritation, and are longer in producing the desired effect. A dose of twenty grains, Mr A. thinks, will act as a sedative to an irritable stomach; whilst smaller doses will only increase its irritability.

The means which the author relies on for the speedy induction of ptyalism, are mercurial inunction, with camphorated mercurial ointment, performed thrice a day, and the exhibition of twenty grain doses of calomel at bed-time, combined with antimonial powder and

opium. The combination of the antimonial preparations, he conceives to hasten the specific effects of the mercury.

Other means of cure, which frequently prove beneficial.—After the more inflammatory symptoms have been removed by active depletions and calomel, the liver may be left in an inactive or enlarged state. If enlarged, small doses of the blue pill, either alone or combined with Plummer's pill, may be given at night, followed the next morning by weak solutions of neutral salts, or the infusions of senna and gentian, or the carbonates of the alkalies. If the inactive state of secretion depend upon slow and insidious disease, the local depletions and mercury, both internally and externally, must be resorted to again. If these means fail, the author recommends sponging the hypochondria with the nitro-muriatic wash, and the exhibition of a weak solution of nitric acid, as a common beverage.

Treatment of the complications of acute hepatitis.—The remarks of the author here relate chiefly to gastritis, which he conceives to accompany acute hepatitis, for the most part from the neglect of active vascular depletions, the propriety of which he so strongly urges. This complication requires the same treatment as simple acute inflammation of the liver, with the reservation that stimulating or acrid purges would be improper. This caution is not to be considered as interdicting the use of calomel, which, in full doses and combined with opium, according to the opinion of the author, in which we heartily concur, directly tends to subdue the gastric disease.

If we were to continue our analysis, it would be necessary that we should next give an abstract of the author's views on the treatment, respectively, of the more chronic forms of inflammation of the biliary organs, and of abscess of the liver; but the length to which this article has already extended forbids this, and we reluctantly pass over these subjects, as well as the sections "on hydatids of the liver," and the "precautions on change of climate, for the adoption of those subject to diseases of the biliary organs," with which the author's truly admirable account of hepatic affections terminates.

The second volume is taken up with the account of the diseases of the liver and pancreas, and of the bowels, including dysentery, diarrhea, and bilious cholera; and of the fevers of warm climates, more particularly those of India, embracing intermittent fevers, remittent fevers whether bilious or malignant, and continued fevers.

The contents of the second volume would furnish ample materials for several analytic articles, if it were thought expedient to continue this review in future numbers. The analysis which we have given, imperfect and incomplete as it is, has nevertheless furnished, we fain would believe, sufficient evidence that the work of Mr ANNESLEY is the production of a master. His account of the diseases of the liver is truly excellent, and we do not hesitate to pronounce it the best that we have yet seen. We have dwelt more particularly on this part of the work, on account of its importance; and because we supposed that an abstract of the opinions of so experienced a practitioner as Mr ANNESLEY, respecting the hepatic diseases of India, would be very acceptable to our readers in the southern states. The low lands of South Carolina and Georgia, bordering on the sea, must resemble to a considerable extent the corresponding tract of country in India, and no doubt are productive of similar affections of the liver.

Bibliographical Notices.

ARTICLE XIII.—*Quædam de Phlegmasiæ Albæ Dolentis Pathologia. Dissertatio Inaugur. Medica; Oct.* 1826. *Auc.* H. G. GRIMM, *Halberstadiensis. Berlin*, 1829.

Since the time of MAURICEAU, to whom we are indebted for the first satisfactory account of that peculiar painful intumescence which attacks occasionally the extremities of parturient females, the disease has been described, under a variety of names, by numerous medical writers, almost every one of whom has advanced a different hypothesis in relation to its nature and causes. The disease is undoubtedly one of exceedingly rare occurrence. Many individuals in extensive practice have never met with it, while to others a very few cases only have presented themselves. WHITE informs us, that in 1897 accouchements, attended at the Westminster General Dispensary, it occurred but five times; and among 800 females delivered by himself but four cases were observed. Dr GRIMM states, that ALBERS and SIEBOLD saw each but five instances of the disease, and that JÖRG had never met with it.

In the essay before us, the author, a candidate for the doctorate in the university of Berlin, has presented a very judicious view of all the facts at present known in regard to this affection. His description of its symptoms, progress, and terminations, is at once concise, clear, and accurate. He examines in detail the various morbid appearances brought to light by dissections, and notices the several affections with which phlegmasia dolens has been too frequently confounded. From every circumstance connected with the disease; from its causes, symptoms, and pathological anatomy; he concludes that it consists in an inflammation of the lymphatic vessels of the limb, commencing, ordinarily, in "the lumbar plexus." This opinion corresponds very nearly with that advocated by Dr R. M. HUSTON, in a paper published in a former number of this Journal*.

The dissertation of Dr GRIMM does him much credit; its merits certainly far exceed those of the ordinary class of inaugural theses.

Q. E.

* See No. VIII. p. 237.

ARTICLE XIV.—*Elements of Chemistry, including the Recent Discoveries and Doctrines of the Science. By* EDWARD TURNER, M.D. F.R.S.E. *Professor of Chemistry in the University of London, &c. &c. Second Edition, enlarged and carefully revised. London*, 1828. *8vo. Pp.* 831.

It gives us great pleasure to be able to announce the appearance of a second edition of the valuable Elements of Chemistry of Dr TURNER, after an interval of only twenty months, from the appearance of the first. The quickness with which this new impression has been called for, may be taken as an index of the estimation in which the author's labours are held by the British scientific public.

The general commendation which we deemed it just to bestow upon this treatise in our notice of it on a former occasion*, must, for additional reasons, be deserved by the present enlarged and revised edition. The portion on electricity is nearly re-written, and that on galvanism very much improved and enlarged. Besides these improvements, an article on crystallization has been added, forming an introduction to the history of the individual salts; and a section on the newly discovered substance bromine, and its principal compounds, has been introduced in its proper place, between iodine and fluorine.

A portion of the inaccuracies, which we indicated as existing in the first edition, have been corrected, while a considerable number have escaped the vigilance of the author. We regret very much that it was impossible for him to profit by our criticisms, on account of the time at which the second edition appeared in London, being contemporaneous with the appearance of the number of this Journal containing our notice; otherwise we feel convinced that the author would have been induced to make a number of additional corrections.

And here we confess that we felt gratified to find, that the passages in the author's section on the laws of combination, &c. which we objected to as obscure, and loosely expressed, have proved, on revision, to be unsatisfactory to the author himself; for these passages have been so modified in the present edition, as to remove our objections and clear up the obscurities complained of, and this has been done, without its having been possible for the author to see our remarks.

We are not without strong hopes, that the scientific public in this country will call for an American edition of this work in octavo, to be published in a manner in some degree to rival, in the beauty of

* See Vol. VI. p. 374, for an analysis of this work.

the impression and paper, the edition which is now before us. The cheap American duodecimo edition, heretofore published, may suit a certain class of readers; but cannot be considered an eligible form for students of medicine and chemistry in our higher seminaries of learning.

ARTICLE XV.—*Description of the Distinct, Confluent, and Inoculated Small Pox, Varioloid Disease, Cow Pox, and Chicken Pox. Illustrated by Thirteen Plates. By* JOHN D. FISHER, M.D. *Boston. Wells & Lilly.* 1829.

This work is most creditable both to the author and the publishers. It is in quarto, and as far as regards all the details of art, execution of the coloured plates, print and paper, may vie with most of the so much vaunted productions of the London or Paris press.

Bearing in mind certain expressions uttered by Dr JAMES JACKSON in his lectures at the Medical College of Harvard University, in the winter of 1824—5, touching the difficulties of distinguishing variolous from other eruptive diseases, and the utility of a series of coloured engravings illustrative of the progress of the former, the author, during his stay in Paris in the years 1825 and 1826, undertook to furnish this desideratum. The paintings, from which the plates in the work are engraved, were executed by a French artist, under the immediate direction of Dr FISHER during the above mentioned period, when the variolous disease prevailed epidemically in that city: they were all begun and finished at the bed-side of the patients from whom they were taken. We subjoin, as farther indicative of the intentions and views of the author, the following extract from his dedication to Dr JACKSON:

"In the text I have merely given an explanation of the plates, and a description of the diseases represented in them. To have done more would have been foreign to the object of the work. It will be observed, however, from the descriptions, that I have considered it as an established fact, that the small pox and the varioloid are one and the same disorder, the latter being only a modification of the former; and that the chicken pox is a separate and independent malady. This, if I recollect right, was your opinion, expressed in a medical journal, soon after the publication of Dr THOMPSON's theory upon the subject. All the observations which I have been able to make go to confirm the truth of the opinion. Indeed, the facts, that the small pox and the varioloid are capable of engendering each other, and that the chicken pox has, year after year, prevailed epidemically in many of our towns in which the small pox never appeared, and consequently without giving rise to it, settle the question of their identity."

The first four plates represent the eruption of the distinct small pox, as it appeared on the face and hand of a male child on the *second*, *fourth*, *sixth* and *eighth day* after it broke out. In the figures under the portraits in plates I. and II. is a representation of the confluent small pox, as it appeared at different periods on the face and hands of a girl aged fourteen. In the figures under the portraits in plates III. and IV., the inoculated small pox is represented during its progressive stages.

In the portraits contained on plates VI. VII. VIII. IX. we have the representation of varioloid, or modified variolous eruption of the distinct kind, as it appeared on the *second*, *fourth*, *sixth*, and *tenth day* of its development. The female, who was the subject of the eruption, had been vaccinated when young, and the marks of vaccination were visible on her arm.

In figure first, under the portrait in plate VI. is a representation of the itch. In figure second, on the same plate, is delineated the rubeolous eruption. The figures, first and second, under the portrait in plate VII. are representations of the chicken pox eruption on a child on the *second* and *fourth day*. In figures 1, 2, 3, and 4, beneath the portraits in plates VIII. and IX., is an engraving of four varioloid pocks, which appeared on a little girl six years of age.

In the portraits contained in the plates X. XI. XII. is represented a case of the confluent varioloid eruption as it appeared on the *fourth*, *sixth* and *eighth day* of its development on a young lady aged twenty years. The figures A. A. under the portrait in plate XI. exhibit an accurate copy of the natural small pox, as it appeared on the hand and round the eye of a labourer, on the *seventh day* after it broke out.

One series of figures of plate XIII. represent the progressive development and changes in a perfect cow pox vesicle as it appeared on the arm of a healthy child, on the *fourth*, *fifth*, *sixth*, *seventh*, *eighth*, *ninth*, *eleventh*, *twelfth*, *fourteenth* and *nineteenth day* after the operation of vaccination was performed.

In another series of the figures in this plate, we have a delineation of the progress of a spurious cow pox vesicle, as it appeared on the *third*, *fourth*, *fifth*, *sixth*, *seventh* and *eighth day* after the matter was inserted.

In this same plate is represented the *chicken* pox eruption in its different forms.

The letter press, accompanying the plates, consists of seventy-three pages of valuable descriptions of the various forms and stages of the eruptive diseases.

The author has not deemed it advisable to exhibit the face precisely such as it was when covered by the eruption, except in one patient of the confluent small pox. He has preferred introducing a few patches indicative of each stage of the eruption. On this

account, the precise physiognomy of a patient with small pox or varioloid is not so strikingly exhibited, and hence some little feeling of disappointment to those to whom the diseases in question have been familiar.

Take it, however, all in all, it is a most valuable work, such as, if in their possession, will prevent physicians, whether in town or country, from being taken by surprise, when the small pox appears either sporadically or epidemically. With such references as furnished in the plates of Dr FISHER, they cannot, as heretofore, plead the excuse of ignorance for being first betrayed themselves, and subsequently betraying the community into errors of opinion and practice, alike subversive of social duty, and personal safety and comfort.

ARTICLE XVI.—*De l'Irritation et de la Folie, ouvrage dans lequel les Rapports du Physique et du Moral sont etablis sur les bases de la Medecine Physiologique. Par* F. J. V. BROUSSAIS, D.M. *&c. &c. Paris*, 1828. *Pp.* 590.

We must be satisfied at this present time with little more than the mere annunciation of a work, which, as well from the celebrity of its author, as from the importance of the matters treated in it, has already given rise to very lively and prolonged discussions between both physicians and philosophers of different sects.

Professor BROUSSAIS appeals at once to the authority of LOCKE, CONDILLAC, and CABANIS, against the reveries of PLATO and the transcendentalism of KANT. We had, says he, a right to expect that the progress made in experimental medicine by HALLER, CHAUSSIER, PINEL, and BICHAT, and our consequently improved knowledge of functions, in the circle of which the operations of mind essentially enter, would have given physiology and medicine a right to dictate laws to ideology, and forever protected our science from the invasion of the ephemeral systems of sectarian philosophy, flanked by their scholastic subtleties and verbal quibbles. But kantoplatonism passing from Germany has been warmly received in France, and under the name of *spiritualism* finds able supporters and ingenious expounders of its mysteries. The object of the author of the present work, is to contrast this doctrine of phrases with the physiological system of facts, and to show at once the obscurity of the former, and the firm basis presented by the latter. He wishes to prove definitively to all those who have devoted the best years of

their life to the study of anatomy, physiology and pathology, that the science which they have cultivated with so much labour, is not, and never can be tributary to metaphysics; that it can derive nothing from this latter; and in place of receiving the law, it ought to dictate it; but as to an ungrateful child which forgets and despises its parent.

Influenced by this paramount truth, he has exhibited the connexion between the phenomena of instinct and intellect, and the excitation of the nervous system. To the subject of nervous irritation he has given all the development which its importance required. The first three hundred and thirty pages of the work are devoted to this branch of the inquiry. The remainder gives the application of the doctrines of nervous irritation to insanity—a disease selected by the author, as that in which this morbid phenomenon plays the most important part.

With what success M. Broussais has performed his task is a question which involves too great a variety of considerations to allow of our replying to it on this occasion. Hereafter we hope to place before our readers such an ample exposition of the contents and arguments of the work as shall enable them to form, for themselves, a pretty accurate judgment of its merits.

Article XVII.—*Experiments to establish a Peculiar Physico-Organic Action inherent in the Animal Tissues, called Endosmose and Exosmose.* *By* Joseph Togno, M.D., *Member of the Philadelphia Medical Society. Philadelphia*, 1829. *Pp.* 23.

These experiments are a repetition of the ones first devised and performed by Dr Dutrochet of Paris. A full analysis of the work of this distinguished physiologist, in which the subject is examined in its different bearings, was placed before our readers in the sixth volume of this Journal. A reference to that review will free us from the necessity of any detailed notice of the present essay. We must not however dismiss it without expressing our sense of the industry and fidelity evinced by Dr Togno in his experiments on endosmosis and exosmosis. He follows ably in the track of other alumni of the Medical College of the University of Pennsylvania, who have contributed to enlighten us on experimental physiology. An allusion to these gentlemen is sufficient to remind most of our readers of the labours of Dr Horner in his repetition of the experiments of Le Gallois and Brodie; of Drs Harlan, Lawrance

and COATES on absorption; of Dr HOPKINSON on the functions of the nerves as taught by Mr CHARLES BELL; of Dr PENNOCK on the operation of cupping glasses in poisoned wounds, as illustrated by the experiments of Dr BARRY; and several others, who, in a more elaborate notice than the present, would be entitled to no mean place.

Dr TOGNO introduces the account of his experiments by a brief but pertinent sketch of the history of the theories held on the process of absorption, the chief of which he specifies: as, 1st. Physical. 2d. Chemical. 3d. Vital.

The three lines of dedication to Dr CHAPMAN which the author of the essay gives from his favourite DANTE, were not, we are sure, intended as a mere passing compliment to the distinguished professor, nor oblique praise of himself. We would press on his attention the assertion in the last line as a thing not yet fulfilled in his own case.

He will allow us to say, that it is a matter of no easy attainment for an Italian to become so thoroughly versed in all the beauties and delicacies of the *Lingua Toscana*, as to proclaim himself professor of *lo bello stile*. How much more time and perseverance, then, are necessarily demanded from this same person before he can hope to be conversant with a language so copious as the English. A long, very long period of patient and repeated trials, aided by friendly criticism and a perusal of the best writers, must elapse ere he can realize the words of the immortal Florentine, as quoted by Dr TOGNO, and say, in allusion to himself and his chosen model in his adopted country, "I have caught from you

"'*Lo bello stile che m'ha fatto onore.*'"

ARTICLE XVIII.—*Journal of the Philadelphia College of Pharmacy. Edited by* BENJAMIN ELLIS, M.D. *Professor of Materia Medica and Pharmacy in the College, assisted by a Publishing Committee, consisting of* DANIEL B. SMITH, CHARLES ELLIS, S. P. GRIFFITTS, JR, *and* GEORGE B. WOOD, M.D. *Professor of Chemistry in the College. Published by the College. No. I. April* 1829. *Pp.* 80.

It gives us much pleasure to announce to our readers, the resumption of the publication of this Journal, on a plan, which, in all probability, will insure its continuance for the future. Every en-

lightened physician, who has the good of his profession at heart, must hail, with satisfaction, every effort intended to improve the science of pharmacy, so intimately is it connected with an advanced state of medical science.

The Journal, on its new plan, is to be published in quarterly numbers of eighty pages each, instead of the former plan of monthly numbers. It is intended to consist of original essays, and copious extracts and translations from foreign and domestic journals, on subjects connected with pharmacy.

The number now before us, contains two interesting experimental memoirs; one on Copaiba, by Mr Elias Durand; the other on Opium and some of its constituents, by Dr Edward Staples; and a copious miscellaneous department of extracts and translations.

We feel satisfied that this publication will be productive of much good, as well in raising the scientific attainments of our apothecaries, as in producing a proper ethical feeling, regarding what is due to themselves as men of science, and to the community. We hope to see the day, when no respectable apothecary will consent to become the agent of quackery, and thus render himself accessory to the gross impositions thereby practised on the public. It is in vain to attempt to justify this disreputable course, by alleging that if the public are willing to buy secret medicines, it is their concern; and the apothecary may, with a safe conscience, sell, and pocket the profits, rather than let these go to enrich others. Such a course of reasoning would go to justify the sale of opium to the known opium-eater, and of brandy and alcohol to the drunkard; it would make the members of a highly important profession, accessory to the injuries which mankind are willing to inflict upon themselves, through ignorance or criminality. We sincerely hope, that the college will look to this crying abuse, for the credit of pharmacy in our city.

From the known talents and industry of the gentlemen to whom has been intrusted by the college the conducting of the Journal, we augur favourably of its success. If even a small portion of the apothecaries in the United States were to feel sufficient "esprit du corps" to support this Journal, its patronage would be ample. Let us hope then, that they will see this subject in its true light, and be sensible, that whatever raises their profession in public estimation, is personally useful to themselves.

Quarterly Summary

OF

Medical and Surgical Intelligence.

I. ANATOMY.

1. *The Ear; Nerve of the Tensor Tympani Muscle.*—The Journal des Progrès, from the Repert. d'Anatomie gives the following as the real anatomical arrangement of this nerve. At the posterior and inferior portion of the inferior maxillary foramen is found a nervous ganglion of considerable size, irregular in shape, of a reddish gray colour, and strongly adherent to the inferior maxillary nerve. From the posterior and upper part of this ganglion, two nervous filaments pass off, the first or uppermost of which, already known, contributes to the formation of the nervous anastomosis of Jacobson; the other, or inferior filament, is destined to the tensor muscle of the membrana tympani. It proceeds backwards, and a little upwards, and at the distance of three or four lines, reaches the internal and posterior surface of the muscle. At the point where the muscle becomes fleshy, the nerve divides into several filaments, which dip between its fibres and are lost among them. This nerve corresponds to the internal part of the middle meningeal artery, and upper part of the eustachian tube, where the bony and cartilaginous portions become united. It is found underneath the nervous filament, which contributes to the formation of Jacobson's anastomosis with which it is parallel, and above the spinous apophysis of the sphenoid bone.

From the above, it is evident that this nerve is derived from the ganglionic system.

2. *Nature of Hydatids.*—M. Collard de Martigny, in the Journal de Chimie Médicale, has published some additional remarks, of which the first consists of an account of the liquid contained in the membrane of hydatids.

M. C. states, that this liquid is colourless or of a slightly yellowish tint, limpid, of a nauseous odour, rather heavier than distilled water, and containing in suspension amorphous flocks of albumen, which are deposited by a state of rest. It does not coagulate by heat, but a few flocks of albumen become precipitated. Its constitution, approximatively, may be stated as

Water	96.50
Albumen	2.90
Salts, of which the chief is chloride of sodium (common salt)	.60
	100.00

In the microscope no traces of organic globules are to be detected.

M. C. proceeds to make some observations on the *hydatide mère*, which he represents as transparent throughout; of variable thickness; of a whitish yellow colour for the most part, and yellowish brown in many places; heavier than water; of slight consistency, and almost destitute of elasticity; soft, of a nauseous odour, and of a homogeneous texture. The parts of the cyst, which are coloured yellowish brown, are the least consistent.

A cyst is composed of superimposed layers, amounting to five in number. The two innermost ones are the thinnest; next the two outer ones; and the middle one, much the thickest of all. They may be counted with the naked eye. The number of layers varies in different specimens.

Dried in the open air, the cyst becomes contracted, more transparent, hard, very brittle, with a smooth vitreous fracture. In this state when placed in water, it rapidly reassumes all its primitive qualities.

M. C. here gives the results obtained by numerous reagents, which we shall not detail in this place; but from the whole of them, he deduces that hydatids are chiefly composed of two kinds of animal matter; namely, *albumen*, and another *substance* in much larger proportion than the former, and endowed with certain properties sufficiently peculiar to distinguish it from all other proximate animal principles.

Its physical properties are enumerated as follows: When hydrated, it is of a soft consistence, almost pulpy, and has an appearance similar to that of mucus or animal jelly. Its odour is nauseous; its specific gravity greater than that of distilled water. When dry it is transparent, very brittle, presenting a vitreous fracture. In water it reassumes its physical properties. On hot coals, it swells and gives out the odour of burnt horn.

The sulphuric, nitric, and muriatic acids dissolve it, but do not become coloured thereby. It is insoluble in acetic acid and ammonia, alcohol, ether, and in water, whether hot or cold. Solution of nutgalls has no effect on it.

M. C. says, that as the peculiar matter of hydatids resembles, in some respects, mucus, he at first gave it the name of *mucus hydatidine;* but since then, he repents of having given it that denomination, against which he will always protest; for it is best not to classify, by remote analogies, a substance whose specific characters lead him to regard it as a pathological principle of a peculiar nature.

M. C. confesses his incredulity as to the *animalization* of the hydatid; and says that, with great respect for the microscopic accuracy of the learned and ingenious, he cannot but wish, that the organization of a worm, as large as a man's head, were not exactly concentrated in a microscopical point.

3. *Professor* Huschke *of Jena on the Structure of the Kidney.*—M. Huschke's examinations have been made on the kidneys of mammiferæ, birds, and reptiles. In the kidney of man, the horse, &c. under the air pump, he succeeded in injecting the tubuli uriniferi from the ureters. The injection penetrates into the calices, and even into the cortical canals of Ferrein; so that the surface of the organ is wholly tinted by it in the horse, partially so in man, and other mammiferæ. Commonly, the uriniferous canals are alone filled; sometimes a small portion of the injection reaches the venous network, but never the granulations of Malpighi. The tubes of Bellini, says Huschke, commence at the papillæ, subdivide by bifurcation, and proceed in straight lines, diverging from each other. When they reach the cortical portion, they form the pyramids of Ferrein, by uniting in fascicles. At the surface of the organ, they proceed in a tortuous course, and contract by degrees as they return towards the medullary portion, without however entering it again.

4. Wedmeyer *on a Canal in the Optic Nerve of the Fœtus.*—M. Wedmeyer, in examining the eye of a fœtus of five or six months, found that, by gentle pressure on the globe, he could cause the vitreous humour to escape from the cut extremity of the optic nerve.

By repeated experiments, he discovered, in the cut surfaces of other optic

nerves, a black point, in which there was a round opening, and through which, by the slightest pressure, the vitreous humour could be forced out, even when the nerve had been left half an inch long. He, also, found a corresponding opening in the centre of the nerve, where it begins to expand into retina. He could never determine the existence of such a canal in the *cerebral* portion of the nerve. M. TREVIRANUS, to whom M. W. communicated his observations, considered the opening as artificial, and produced by the pressure. M. W., however, ascertained that it can never be found after the seventh month of utero-gestation.—*Archives, March* 1829.

5. CALMEIL *on the Spinal Marrow*.—M. CALMEIL states that the posterior groove penetrates as far as to the grey lamina that unites the lateral fascicles of the grey substance.

The existence of a central canal of the spinal marrow has been long acknowledged, but regarded as a preternatural state of the organ. M. C.'s observations confirm this idea, but go to show, that this is a more common case than it has been imagined to be. When he saw it, the canal existed in lieu of the gray lamina, which is attached to the longitudinal commissure of the medulla. He has also ascertained that the lateral canals, mentioned by NYMANN, GALL, and H. CLOQUET, have been sometimes found with such characters as hardly to admit the belief that they were artificially produced. He gives a curious case of a madman, in whose spinal marrow three canals were found, one central and two lateral.

M. C. says that we ought not to regard autopsic examples of softened spinal marrow as proofs of that change having taken place during the lifetime of the subject. It occurs in winter as well as in summer. The gray matter softens and even liquefies in a few hours; the white undergoes this change more slowly. It is very common to find the white matter in a natural state, while the grey is humid and almost diffluent.

II. PHYSIOLOGY.

6. BONORDEN *on the Circulation*.—In an article on the circulation, which is contained in the Journal des Progrès, Vol. XII., Dr BONORDEN has broached a new view of the causes of that great phenomenon. He asserts that the blood's motion depends upon a principle independent of the mechanical operations of the heart! The principle which he contends for operates by attracting the blood into the organs, and gives us the idea of a vital current passing from the centre to the periphery of the body, like those light substances which are first attracted to an electric body, and then repelled from it. The blood is attracted by the organs and then forced off from them by the veins, as soon as the organs have appropriated to themselves such molecules as are necessary for their own proper nutrition, and other functional services.

Now to our view, this seems to be the highest example of that busy spirit which would upset the whole structure of things established, for the gratification of a merely innovating appetite. For us, we cannot see how any one who has studied the structure, and in the slightest degree reasoned on the functions arising from the mechanical constitution of the heart, could by any inversion of the senses, be led to such conclusions.

7. *Occlusion of the Larynx not inconsistent with Voice*.—A young man, having cut his throat, was taken care of and the wound healed, leaving an external opening in the throat; but the larynx became completely occluded. M. RENEAUD, who was consulted by the patient for a chronic inflammation of the air passages, found the occlusion complete; and notwithstanding, he could pronounce the vowels *a*, *e*, *o*—but not the letters *m*, *n*.

The patient having died of the bronchitis, M. B. found on examination that a communication had been formed between the windpipe and pharynx by the wound, which had remained open. The patient could spit, and also whistle.

8. *Proportion of Sexes in France.*—At a session of the Royal Institute, November 24th, 1828, M. Fourier made a verbal report on the work of M. Girou de Buzareingues, entitled Statistical Researches on the relative predominance of the two sexes in the different departments of France.

The observations of the author were made both on men and the inferior animals. Whenever he caused, in the lower animals, a very young male to unite with a female of full age and vigour, he obtained more females than males; and the contrary was the case, when the male was vigorous and of full age, while the female was of middle age; and M. De Buzareingues hence concludes that in the lower animals, the sexes can be propagated at pleasure on our farms, giving us at will a greater proportion of males or of females as may be most desirable.

The doctrine is that wherever the motorial or active forces predominate, there will be a predominance of males; but where there is a diminution or inferiority of the active forces, females will be propagated. Hence arises a delicate question for the political economists. M. De Buzareingues says, that agricultural pursuits, and all those occupations which require great bodily exertion, are calculated for the development of the active forces; and he finds that, in the agricultural districts of France, there is a decided excess in the number of males produced, while in the commercial and manufacturing districts the number of females is greater.

9. *Proportion between the Nervous System and other parts.*—M. Tiedemann has reported several cases of defective development of the spinal marrow, as correspondent to a congenital absence of the limbs; and, on the other hand, cases of excessive development of the brain and nerves having relation to the existence of supernumerary organs. M. T. regards these phenomena as constantly observable in such cases. The professor concludes, that the nervous system, as being the first existing part of the animal, regulates the formation, and ulterior development of the embryo, and determines the particular form and disposition of the other organs.—*Archives, March* 1829.

10. *Sense of Touch.*—The presence, in insects, of the ganglion which represents the brain, is not absolutely necessary for the existence of the sense of touch. After decapitation, they feel, on the surface and in their limbs, by means of their other ganglions, such impressions as may be made on them. The spinal marrow of reptiles, young birds, and young mammiferous animals, seems also capable, after the ablation of the brain, of being modified by irritations, of feeling them, and of occasioning, in consequence thereof, *durable* and *calculated* movements, which are not to be confounded with those convulsive and fugacious motions, that are attributable solely to irritability. M. Calmeil thinks this faculty of the spinal marrow is probably diffused throughout its whole extent. Farther, it is probable, that, in the natural state of our functions, the brain is the sole centre of irritability, and that the spinal marrow only becomes sensible, when the brain ceases to exist. The co-ordination of our voluntary motions is doubtless attributable only to the brain.

11. *Inoculation for Hydrophobia.*—M.M. Vatel and Girard, at the Veterinary School of Alfort, inoculated a horse, two dogs, and three sheep, with the saliva of a sheep which gave symptoms of madness after having been bitten by a rabid dog. Not the least indisposition resulted from the inoculation, although the animal from which the saliva was taken died soon afterwards.—*Journ. des Progrès.*

III. PATHOLOGY.

12. *Hydrophobia.*—In Rust's Mag. f. die gesammt. heilk. Vol. XXVIII. No. 3, 1829, two cases of hydrophobia are related by Dr. Fuchs, with the morbid appearances discovered after death. The leading symptoms of the disease in both, were the same, very nearly, as those which occurred in almost all the cases upon record; it is unnecessary, therefore, to enter into their detail. The first case occurred in a lad 15 years old. On the 4th of October 1825, he was bitten by a cat on the back of his hand. The cat was destroyed though it did not appear to have been affected with rabies. Upon the 17th of November following, the peculiar symptoms of hydrophobia presented themselves. Immediately subsequent to the bite, the wound had been treated with caustic, and well sprinkled with powdered cantharides; mercurial ointment was rubbed into the forearm, and four grains of belladonna administered internally. The patient died on the morning of the 19th of November. *Sectio Cadaveris*, 12 hours after death. The only morbid appearance discovered in the brain, was a slight softening of its substance: its membranes were not inflamed, nor was there any trace of exudation. The spinal cord, from the medulla oblongata to the cauda equina, was covered with a layer of coagulable lymph. Its dura mater was in a state of inflammation, being at its lower part of a deep scarlet colour. This was also the case about the roots of the nerves distributed to the muscles of the trunk and extremities. On cutting into the substance of the spinal marrow, it was found in a state of complete softening, flowing before the knife like a soft pap: in this softened substance no bloody points were discoverable. The viscera of the thorax were healthy with the exception of a considerable engorgement of the inferior lobes of the lungs. The bronchia were free from disease. On examining the tongue, there were found upon its upper surface, near its root, from 40 to 50 small brownish elevations, regularly arranged on each side, and having nearly the size and appearance of the projections upon the surface of the toad. They were covered with a thick, tough membrane, and very generally presented in their centre a small black point. By a more careful examination it was found that each projection was a vesicle, containing a fluid resembling lymph, and not the natural papillæ of the tongue enlarged by disease. The tongue was otherwise unaffected. In the pharynx, no traces of disease. Salivary glands, not swollen. The viscera of the abdomen, of a natural appearance.

The second case occurred in a girl 10 years old. On the 22d of November, 1825, she had been bitten by a dog, upon the right arm and eyelids. Blisters were immediately applied over the wounds of the latter, while that of the arm was cauterized and kept in a state of free suppuration for eight weeks. After this, four grains of belladonna were administered daily. The symptoms of hydrophobia commenced on the 14th of May 1826. The treatment consisted principally of the ext. belladon. internally, and externally blisters over the right eye, and to the right arm, and frictions with mercurial ointment upon the lower jaw, the arms, and thighs. The patient died on the 16th of May. *Sectio Cadaveris*, 24 hours after death. The entire extent of the spinal cord being laid bare, on its external surface, but few traces of inflammation were perceptible. The pia mater was covered with striæ of a deep red colour. The spinal marrow itself was reduced entirely to a soft pulp, which flowed out upon the slightest pressure. No points of blood perceptible. The brain was somewhat softer than natural. An incision being made into it, the cut surface of both the cortical and medullary portions appeared thickly studded with small bloody points. Its veins were moderately filled with blood. As in the former case, the posterior part of the surface of the tongue was beset with numerous vesicles; but irregularly dispersed, of a bluish-red colour, and without the black point in the centre. They were of different sizes, from that of a pea downwards, mostly in contact, not surrounded by any redness, and containing a thickish fluid, which did not escape on their being opened, but in part adhered to the knife. These vesicles gradually diminished, until about the middle of the tongue, where they were entirely want-

ing. Slight traces of inflammation were perceptible upon the pharynx. The remaining viscera of the body were in their normal condition.

In the London Medical and Physical Journal for February 1829, we have likewise a case of hydrophobia, related by Mr Goodrich. This occurred in a man about 60 years of age, who had been bitten by a dog on the left arm and hand about a month previously to the occurrence of the disease. The treatment consisted of tolerably free venesection, and the administration of the hydrocyanic acid. Death occurred in about 27 hours. On examining the body, the heart was found free from disease, with rather more water in the pericardium than natural. The lungs were completely gorged with grumous blood, and the pleura adhered on the right side. On removing the cranium, which was remarkably thin, and cutting into the substance of the brain, the medullary portion appeared thickly studded with red points. There was about a table spoonful of water in each ventricle. The plexus choroides was turgid; the corpora striata, thalami, and basis of the brain, preternaturally injected. The cerebellum, crura cerebri et cerebelli, in a high state of inflammation. The spinal cord was throughout considerably inflamed. Opposite the two last cervical and dorsal vertebræ, the cellular substance was studded with dark patches of coagulated blood, and the theca vertebralis thickened. The larynx and pharynx presented not the slightest vestige of disease.

The subject of hydrophobia appears of late to have attracted considerable attention among the profession in Europe. In addition to the cases already detailed, we have in a recent number of the Archives Gen. de Médecine, (December, 1828,) a paper by M. Ménière, entitled "Recherches Anatomiques et Thérapeutiques sur l'Hydrophobie." This gentleman found, as the result of his researches into the morbid anatomy of this disease, that the cerebro-spinal system was injected with blood and of a red colour, as in some cases of acute meningo-encephalitis. The heart was soft, dilated, and engorged with blood. The aorta was occasionally of a bright red. The lungs were often emphysematous; most commonly, however, they were engorged, but crepitant. The mouth, pharynx, and æsophagus almost always presented traces of phlogosis, more or less intense. The same was remarked in the digestive organs. In many subjects the cerebellum was more soft than natural. Of two individuals, in whom death had been preceded by an erotic spasm with ejaculation of the semen, in the encephalo-rachidian organs of the one, was found no other trace of disease than a red spot, of about three lines in diameter, occupying the centre of the annular protuberance, and resembling an ecchymosis; of the other, the cerebro-spinal pia mater was injected, and the cortical substance of the brain much softened. In neither was there any softening of the cerebellum. With respect to the time which elapsed between the bite and the invasion of the disease, this varied in different cases from three weeks to a year. The duration of the confirmed stage of the disease, from the commencement of the spasm of the respiratory organs and the convulsions, with or without furor, was very short, rarely exceeding twenty hours. The period of invasion, marked by depression of the spirits, disturbed sleep, frightful dreams, undefinable uneasiness, pains in the back and limbs, cephalalgia, loss of appetite, &c. was in general of some days' duration.

13. *Tetanus.*—A female, 44 years of age, accustomed to remain for some time with her legs immersed in water, experienced, October 8th, great difficulty in moving the lower jaw, with a feeling of rigidity of the muscles of the neck, and a stiffness of the limbs. On the 10th she entered the "Hôpital d'Udine;" labouring under considerable tetanic contractions of the trunk and limbs, with violent trismus. The latter was greatly relieved by a warm bath. The trunk was bent backwards, the limbs extended and stiff, breathing frequent and stertorous, abdominal muscles but little contracted; bowels costive; urine small in quantity; pulse strong and frequent; skin hot and dry; intellectual faculties not in the least impaired; and sensation perfect in every part of the body. Thirst great; tongue red and dry. The symptoms augmented in intensity until the period of her decease, which took place five days subsequently to the attack. The body

was examined 24 hours after death. The brain was without disease. In the spinal canal, there was found an increased effusion of serum mixed with blood. The arachnoid membrane of the cord presented no alteration. The pia mater gave evidence of an increased action of its vessels having existed: this was more apparent on the anterior than on the posterior aspect of the cord. The medulla spinalis presented, anteriorly, a multitude of granular bodies, in size from a grain of millet to that of a lentil: it was very soft, and seemed entirely formed by the agglomeration of these granular bodies. In colour it was of a light yellow, and on its anterior surface, at different parts, small red points were observed. Its posterior half was perfectly healthy. The white substance appeared to be the part in which the greatest alteration had taken place: the grey substance was apparently unaltered. The filaments of the anterior spinal nerves, were, at their origin, sensibly diminished in thickness, and of a yellowish colour, very soft and easily lacerated: in the course of several of them, there existed small tumours similar to those on the anterior part of the medulla spinalis. The posterior nerves were unaffected. The cavity of the chest contained a considerable amount of bloody serum; the stomach and intestines exhibited slight traces of inflammation; the kidneys were of a brownish red, and gorged with blood; the bladder was much contracted, and contained but little urine. The above case is related by Dr Poggi. For our account of it, we are indebted to the London Medical and Physical Journal, Feb. 1829. It is noticed here principally with the view of showing the similarity of the morbid appearances discovered after death in tetanus and hydrophobia. It proves also the difference in the functions of the spinal nerves: sensation was perfect until death; the motive power alone being affected. The anterior nerves, those supposed to preside over motion, were alone in a diseased condition; the posterior nerves, or those of sensation, were found to be unaffected.

14. *Myelitis.*—The following case of myelitis is extracted from the very recent work of M. Barbier, "Précis de Nosographie et de Thérapeutique," Tome II. p. 235. The reader will notice the resemblance between the symptoms during life and the appearances after death presented by this case, and those which occur in hydrophobia. In November 1822, there was admitted into the Hôtel Dieu at Amiens, à girl 16 years old, who had not yet menstruated. For two months she had complained, at intervals, of pains in the head with heat and heaviness. On the evening previous, she had been suddenly seized with violent convulsions, which recurred in paroxysms at intervals of two hours. Throughout the body she experienced shocks like those of galvanism. She had the free exercise of her senses and intellect. Deglutition was performed with great difficulty. Her respiration was oppressed; the pulsations of her heart were irregular, hard, and so extensive, that the organ appeared to fill the whole chest and elevated the sternum. The pulse was unequal and very irregular, and the abdomen tumid. Next day, the patient was, as it were, apoplectic, with loss of feeling and motion, and great difficulty of respiring. The pulsations of the heart were the same as on the preceding evening; those of the radial artery were tense, very quick, and irregular. In the course of the day the patient died. On examining the body there was discovered an increased development of the vessels covering the spinal cord. Towards the first dorsal vertebra, to the extent of three fingers' breadth, there was an entire softening of the medulla spinalis; the softened matter being infiltrated with blood. In the brain, there existed a very decided congestion of blood, which had occurred, no doubt, the day the patient died. The vessels of the surface of the brain were enlarged and distended, as were also those which penetrated the substance of the organ.

15. *Delirium Tremens.*—In Rust's Magazine for 1829, No. 3, Dr Schirlitz relates a fatal case of delirium tremens, with the appearance of the brain after death. It occurred in an habitual drunkard. The symptoms of the disease were well marked. The treatment consisted of the application of twelve leeches to the forehead and temples; of injections of cold water into the rectum twice a

day; cold applications to the head; blisters to the nape of the neck, and every two hours one grain of calomel and one-fourth of a grain of opium, with a spoonful of a mixture of infusion of valerian and liq. ammon. acet. between each dose. He died on the ninth day of the disease in "apoplectic convulsions." The skull being opened, forty-eight hours after death, the dura mater was found inflamed; the vessels of the brain somewhat engorged with blood, the lateral ventricles containing about six ounces of a clear fluid. The examination was not permitted to be carried any further.

16. *Melæna with Hardening of the Pancreas.*—Under this head, a very interesting case of gastric and abdominal disease, accompanied with discharges of blood from the stomach and bowels, is related by Dr SCHIRLITZ in RUST's Magazine, No. 3, 1829. Mary M. 51 years old, slender make, and of a meagre habit, with a jaundiced hue of the skin, had, from her 15th year, suffered frequent attacks of pain in the stomach, extending towards the back, accompanied with a vomiting of a watery fluid. The patient had ceased to menstruate for about a year. The discharge had always been trifling and attended with pain in the loins. In the commencement of July 1827, the pain in the stomach augmented greatly in violence. She had taken a variety of remedies without the advice of a physician. Dr S. saw her for the first time, September 12th, 1827. She was lying in bed, her knees drawn up to the abdomen, complained of a severe pain in the epigastrium and left hypochondrium, and was greatly exhausted. She had constant eructations, had twice vomited blood, and passed a quantity of the same—black, coagulated, and of a fetid smell—by stool. There was a very distinct pulsation at the epigastrium. Besides these symptoms, she was subject to horripilations, cold clammy sweats, violent pulsation of the heart, frequent faintings, ringing in the ears, and constant dragging pain at the spine. Her breathing was short and attended with a dry cough, and her pulse small and scarcely perceptible, disappearing under the fingers. Cold applications were directed to the epigastrium, and internally acetic ether; with sulphuric acid and water for drink. By this the disposition to faint was entirely removed, and the pulse somewhat raised. In the evening the abdomen was tumid, and the epigastrium very painful. Tamarind water with cream of tartar for drink; an injection of whey. On the 16th severe eructations; about 6 ounces of blood discharged by stool: the patient had taken some thin soup, which caused severe pain of the left hypochondrium, extending to the loins. The pulsation at the epigastrium was so considerable as to be perceived by the eye; pulse small, 90 in the minute. Seven leeches were applied to the anus. September 22. During the four last days, three discharges per anum of a black, bloody fluid resembling tar. The patient is now only able to lie on the left side; great debility; pulsatio epigastrica considerable; great thirst; frequent, small pulse; severe pain in left hypochondrium. The symptoms continued pretty much the same, the vomiting of blood being occasionally repeated, with discharges per anum of an offensive tar-like fluid, until the 25th, when the fæces became natural in consistency and colour, and the patient was able to turn on the left side. To relieve the pain which still continued, from six to eight drops of laudanum were directed during the height of the paroxysm. Whey clysters were administered, and a solution of acetate of potassa, with ext. tarax. et gram. by the mouth. The patient had now from two to three natural stools per diem. On the 7th of October, the vomiting of blood returned, with the morbid discharges from the bowels already alluded to. There was constant pain of the epigastrium; the pulsation at the latter very considerable before each attack of vomiting; the abdomen tumid, but soft. From constant pain and loss of sleep the patient now sank rapidly. She could lie only on the right side with her knees drawn up. On the 12th a great quantity of blood was discharged from the stomach, and on the 13th she died. *Sectio Cadaveris.* Both lungs adhered to the pleura—their parenchyma studded with tubercles of the size of a pea. Heart natural and filled with coagulated blood. The liver without any mark of disease; the gall bladder rather large, and nearly empty. The stomach filled with coagula of blood; its mucous mem-

brane of a deep red colour. The mucous membrane of the duodenum, studded with numerous black points. The transverse arch of the colon distended; its inner surface covered, as was also that of the intestines generally, with a black, pitch-like substance. The pancreas was somewhat enlarged, and of so firm a texture that the scalpel could scarcely penetrate into it.

17. *Congenital Ovarian Dropsy.*—A female child, 17 days after birth, died suddenly of convulsions. On examining the body, the lungs were found engorged, and at their lower part hepatized. The mesenteric glands were considerably enlarged and hardened. The peritoneal covering of the intestines had a peculiar yellowish wax-like appearance. The uterus was natural. On cutting into its cavity, on its posterior surface, a prominent line, marking the original division of the fœtal uterus into two parts, was very apparent. But the most remarkable circumstance was the condition of the ovaries; both of which consisted of a sac filled with a watery fluid, and of the size of a hen's egg. Each sac was divided into 16 cells. The serous fluid by which they were filled, contained a considerable quantity of a thickish sediment. The foregoing case is related by Professor MAYER, of Bonn, in Graefe and Walther's Jour. für Chirurg. &c. Vol. XI. No. 4, 1828. In concluding the account, he remarks, that this dropsical state of the ovaries could not have been formed during the few days the child lived subsequent to its birth; but must be considered as congenital. It is well known that the ovaries, when affected with dropsy, contain frequently, portions of bone, teeth, hair, &c. Is it not more than probable that this condition of the organs is connected with a congenital disease of these parts?

18. *Peculiar Eruptive Disease epidemic among Children.*—It is stated in Rust's Magazine, 1829, that Dr STRECHER of Dingelstädt has observed among children, most of whom had been already affected with scarlatina, a peculiar acute eruption, commencing with tolerably severe febrile symptoms and vomiting. The pulse quick and hard, the skin dry and hot. There was severe pain of the head and inclination to sleep; great thirst, and sometimes delirium. With these symptoms there quickly appeared an eruption, principally confined to the neck, breast, and upper part of the abdomen, of a deep red, similar to erysipelas, interspersed with numerous small papulæ, resembling those of measles. There was no redness of the eyes, no symptoms of catarrh, nor any affection of the chest. By the third day, the eruption extended itself to the knees, but appeared very slightly or not at all upon the arms and legs. The febrile symptoms continued, in general, for 5 days, or even longer; when in most cases a perspiration broke out towards evening. A desquamation now took place from the whole body, but most extensively from the neck. In some cases, the sudden repulsion of the eruption was followed by inflammation and suppuration of the glands of the neck. The treatment pursued was very simple—in the commencement, the patient was allowed to drink freely of cold water, subsequently of simple elder tea. The disease appears to have been attended with little or no danger.

19. *Rupture of the Hepatic Duct.*—A case of this kind is related by Dr H. WOLFF of Bonn, in GRAEFE and WALTHER's Journ. f. Chirur. u. Augenhiel, Vol. XII. No. 3. The patient, a female 60 years old, had been affected some years before with jaundice, and since had suffered repeatedly from colic attended with nausea and vomiting. The attacks lasted from a few hours to several days: in the intervals she enjoyed tolerably good health. The remedies from which she experienced most relief were HOFFMAN's anodyne, and chamomile tea. Several days previous to the 1st of July 1827, the patient had experienced slight colicky pains. On the latter day, after eating a hearty dinner, she retired to bed, and about 4 o'clock, she was attacked with severe pain of the abdomen, and the food she had eaten was thrown up by vomiting: the remedies already mentioned were resorted to, but without effect. The pulse was natural, the skin cool, tongue clean, bowels lax, the urine clear. In the intervals of the pain, no ten-

derness of the abdomen was experienced upon pressure. Ten to fifteen drops of the liquid laudanum of SYDENHAM were directed. After the second dose, the pain diminished, but returned in the evening. A few doses of the laudanum, however, procured a quiet sleep. At 9 o'clock the patient was awoke by a severe attack of pain; the abdomen was swollen, tense, and very tender to the touch. The extremities were very cold, the face was bathed in a cold sweat, and the pulse was very small. The patient was tormented with an insatiable thirst, but rejected instantly every kind of drink. Thirty leeches were applied to the abdomen. The pain augmented every moment, with a constant ineffectual inclination to evacuate the bowels. A blister was now applied, and opium given internally without effect. An injection of mucilage of flaxseed produced a copious feculent discharge: a small quantity of clouded urine was also passed. The symptoms augmenting in violence, the patient sank rapidly, and died at 4 o'clock, P.M. On examining the abdomen, about three pounds of blood mixed with bile were found in its cavity. The intestines were covered with the same, and at different points presented traces of inflammation. On the lesser omentum there was observed a dark coloured spot, several inches in diameter. By a cautious examination at this part, the ductus hepaticus was found torn across; the torn extremities being surrounded by a coagulum, composed, evidently, of recently extravasated blood, and previous exudations of coagulable lymph. The liver was sound. The gall bladder was moderately filled with bile, and contained also eight brownish-green, angular concretions, of the size of peas. The smallest of these was thrust into the opening of the cystic duct; but did not entirely close the canal so as to prevent the passage of the bile. In the remarks which accompany this case, it is presumed that the patient had laboured for a considerable time under an inflammation of the biliary ducts, giving rise to the effusion of coagulable lymph. The attacks of colic are supposed to have been occasioned by the irritation of the gall stones passing into the inflamed duct. The rupture which took place on the morning of the 2d July, was caused by a violent contraction of the diseased ductus hepaticus.

20. *Catalepsy with Fever.*—A young soldier, whilst engaged alone in some military duty, became suddenly completely torpid. He was accidentally discovered, some time afterwards, lying on the ground, in a state of complete insensibility, and "stiff as a statue." His limbs, however, could be readily moved, and retained completely the position in which they were placed. In about an hour, consciousness returned, and his body became covered with a profuse perspiration. On the succeeding day he was seen by Dr JAGER, regimental surgeon, by whom the case is related in GRAEFE and WALTHER's Journ. f. Chirurg. u. Augenheilk. No. 3, 1829. The symptoms were as follows. Pulse, full, hard, and quick; eyes glassy and injected; pupils contracted; respiration quick and oppressed, with considerable thirst, burning heat of the skin, ardor urinæ. On the succeeding day, the patient had two attacks of genuine catalepsy: during these, the limbs remained fixed in the same position they were in immediately preceding the attacks. He was at this time in a recumbent posture, but subsequently he was attacked while standing, sitting, or walking. The paroxysms, however, were less intense, and of shorter duration. Dr J. had him twice bled, to the extent of fifteen ounces each time, directed cold applications to the head and abdomen, with active cathartics internally. By these means the febrile symptoms were entirely removed. To suspend the attacks of catalepsy, a powder, composed of calomel, flores zinci, and hyosciamus, of each half a grain, was administered every three hours. By the continuance of this remedy for four weeks, the paroxysms were reduced to one in 24 hours, of a few minutes duration. The patient was now placed on the use of a saturated decoction of bark. In fourteen days the paroxysms were entirely suspended, and he was discharged cured. The latter attacks were at intervals of six days, and lasted but two minutes each.

21. *Case of Worms simulating Acute Hydrocephalus.*—In the autumn of 1823 M. MENARD was called to a boy 8 or 9 years of age, who had been confined to bed for about four days; he complained of acute pain in the fore part of the head: the pulse was small, not very frequent, and contracted. He lay upon his back, was averse to the light, and his respiration was slow and panting. Every symptom led the doctor to fear a cerebral inflammation. The usual remedies were accordingly resorted to. The disease, however, rapidly progressed, and soon the intelligence of the patient was destroyed, and his vision affected. Emaciation was extreme, and after some days the patient was so reduced that he appeared every moment ready to expire. M. M. having employed without effect all the resources of his art, even to mercurial frictions, the disease was finally permitted to take its own course. The patient craved cold water, which was allowed him in small quantities, at short intervals. This was in fact the only drink that could be swallowed. In a short time the patient commenced to discharge from the bowels a number of lumbricoides in balls; he likewise passed some of the same by the mouth. In this manner he expelled, in the course of from three to four days, about forty. With these discharges his strength was re-established, his intelligence returned, and his appetite for food recommenced. So complete was the crisis that the patient at the end of eight to ten days was entirely convalescent. The above case is related in the *Revue Médicale, Feb.* 1829.

22. *Softening of the Organs and Tissues, not always the Effect of Inflammation.*—In a brief account of the labours of the Atheneum of Medicine for the year 1828, contained in the February number of the Revue Médicale, we learn that M. ANDRAL, after an attentive study of the subject of "ramollissement," in all the organs and tissues of the body, and under every various circumstance, has come to the conclusion, that, while there is no doubt the diminution of cohesion is most constantly the result of genuine inflammation, it may, nevertheless, arise in the same organs and tissues from causes of an opposite character. Thus, while there is no doubt that softening of the brain is the effect of inflammation in unequivocal cases of cerebritis, yet there can be no question, he thinks, that the same effect may be produced in the brain by an excess of the white fluids, or by a defect or morbid condition of the nutritive process, as has been observed in infants, females, and old persons. Again, if it is true that the heart, stomach, intestines, and spleen lose their normal density, as a consequence of an acute or chronic phlegmasia, we must at least doubt whether the same effect results from inflammation in those cases of pulpy softening, with complete discoloration of the affected tissues, observed in the stomach and intestines, after certain chronic diseases of infancy; in the spleen, subsequent to intermittent fevers; and in the heart in many cases, in which neither the local nor general symptoms would induce us to believe that inflammation had existed. If the above examples are insufficient "to silence the voice of analogy, which is all that can be adduced in favour of the opinion which refers the production of softening, in all instances, to inflammation," M. ANDRAL would then refer to the softening of the muscular fibre in scurvy, of the osseous structure in rickets, of the cornea in infants who have died of marasmus, and in animals deprived of aliment.

23. *Causes of Induration.*—From the source indicated in the preceding article, we learn that the question whether induration is always a consequence of inflammation, has been examined by M. BOUILLAUD with much attention. He conceives that, before we can arrive at any certain conclusion upon this subject, it is necessary to become acquainted with the intimate nature of inflammation and induration, in order to ascertain whether the liquids, equally with the solids, may not become hardened, and, in certain cases, be themselves the principal cause of organic indurations. Having examined this point, he proceeds to show, that inflammation is not always the cause by which indurations are produced. This he conceives to be the case in the hardening of the cellular tissue of new born infants, and in those indurations which evidently depend upon some obstacle to

the venous circulation. "The details, however," says Dr JOLLY, by whom the report, from which this account has been extracted, is drawn up, "into which our colleague has entered, upon the subject of indurations produced by the crystallization, or simple augmentation of the density of the fluids contained in our organs, will prove to you that very many indurations, as for instance callosities, scirrhus, tuberculous masses, and accidental productions of cartilage and bone, are most commonly the terminations of chronic inflammation."

24. *Compression of the Diaphragmatic and Pneumo-Gastric Nerves simulating Disease of the Heart.*—This case, extracted from the Jour. Général des Hôspitaux, occurs in the February number (1829) of the Bibliothèque Médicale. A female, 60 years of age, had for many years experienced a pain behind the sternum and at the base of the chest, which occurred in paroxysms. This pain, which was at first slight, augmented in intensity, preserving however its paroxysmal character, and became soon accompanied with violent palpitations of the heart, difficulty of respiration, œdema of the upper extremities, and a small pulse; in a word, with all the symptoms indicative of an obstacle to the circulation through the superior extremities. This patient remained for two years at La Pitié, during which time her chief complaints were of the pains behind the sternum, and at the lower part of the chest. For a long time she had no appetite; emaciation was extreme; and her voice was remarkably weak. The patient finally died. On examining the body, it was discovered that the pneumo-gastric and left diaphragmatic nerves, the aorta and its branches, and the veins of the superior extremities, were surrounded in different parts of their extent by masses of a scirrhous nature, by which they were compressed, but not disorganized. The heart, which preserved its ordinary dimensions, was of a violet colour, much deeper than ordinary; its tissues, also, appeared softened. The lungs were healthy, with the exception of the right, which presented, at its summit, an excavation filled with blackish blood. In the digestive organs, there was observed the commencement of atrophy; otherwise they were healthy.

25. *Cholera Morbus.*—The Journal Général de Médecine for January 1829 contains a "Memoir upon Cholera Morbus, and particularly upon the Employment and Action of Opium in this Disease," by M. H. CHAUFFARD, Physician to the hospitals of Avignon, presented to the "Société de Médecine" of Paris, and by them ordered to be printed. In this memoir, the author maintains the inflammatory nature of the disease. He states that an examination of the bodies after death has proved to him "that cholera, when it reaches its greatest degree of intensity, should be considered as one of the most serious inflammations of the upper portion of the digestive tube with which we are acquainted." The memoir was referred to M.M. PATISSIER and COLLINEAU, who in their report observe as follows: "The acute character of cholera, the pains by which it is accompanied, the augmentation and altered nature of the secretions, but especially the examination of the bodies of those who have died of the disease, after prolonged sufferings, should cause us to rank it among the inflammations. Nevertheless, we must not forget the extent to which the nervous action is augmented. It should be recollected, also, that the invasion of the disease, as well as the termination of the most important of the morbid phenomena by which it is accompanied, is generally very rapid, and often, sudden; that many of the sporadic cases are produced by affections of the mind; that the discharges from the stomach and bowels return periodically; that in general they are accompanied by cramps, convulsions, and other nervous affections; that the symptoms, characteristic of the disease, arrive at their highest degree of intensity before we can suppose that any alteration of the tissues can have been developed; and finally, that in those violent cases, in which death has promptly occurred, no important lesion has been discovered upon subsequent examination of the bodies.

"From a consideration of all the phenomena by which cholera morbus is characterised, it must be admitted that there exists between this disease and the

other gastric and intestinal phlegmasiæ, differences which have not escaped the attention of observers. It is, therefore, not without cause, that highly respectable physicians have ranked cholera as a particular disease; separating it from all other inflammations. Some have even classed it with the spasmodic affections, from the circumstance of the nervous action being frequently predominant, and capable of causing death before inflammation has had time to develope itself."

26. *Intermittent Pulmonary Catarrh.*—In the Transactions of the Medical Society at Lyons, the following case is recorded, in which there occurred complete intermissions in the symptoms of pulmonary catarrh. The case is cited in the Bibliothèque Médicale, for Jan. 1819, with the remark, that it supports the proposition of the physiological doctrine, that, "Irritation may be intermittent, whatever may be the parts in which it is seated."

A sister of Charity, 55 years of age, has had a singular predisposition to catarrhal affections, since she left Provence, her place of birth. She was covered almost constantly with an abundant, cold, perspiration; the suppression of which has frequently given rise to a slight anasarca. About the middle of the winter of 1826, she was affected with a very severe coryza, which disappeared by degrees, while a very violent pulmonary catarrh made its appearance, continuing for three weeks. The return to health was nearly complete when the patient exposed herself in the evening to a cold and humid atmosphere. She immediately experienced a chill of two hours duration, followed by a fever which continued four hours: in the morning an abundant perspiration occurred. During the day, the patient continued weak, but coughed little, breathed freely, and was without fever. In the evening she slept quietly. At 11 o'clock, she was awoke by a violent chill, with considerable cough, and great oppression, but no expectoration. At one o'clock the chill was succeeded by an insupportable heat, with anxiety. The pulse was hard and frequent, and the patient could only respire with any ease in an upright posture. There was violent cough, and a frothy expectoration. At 6 o'clock, a general sweat broke out, and the symptoms were considerably mitigated, and there was an expectoration of mucus which became more and more consistent. She fell asleep, and did not awake for several hours. The next morning she arose without any symptoms of disease, ate and digested well. The next night a paroxysm similar to the above again occurred; all the symptoms disappearing and remaining off during the succeeding day. Similar accessions and intermissions of the disease continued to recur for upwards of five weeks; during which time the patient refused to take the quinia which it had been proposed to administer. Finally, however, she took in the evening, eight grains, sulphat. quiniæ. The succeeding accession occurred later, was without a chill, and of much shorter duration. The remedy producing colic and diarrhœa, it was necessary to suspend its use. The extract. quiniæ affected less the digestive canal. The use of this being continued for some days, the disease was entirely suspended, and the patient became rapidly and completely convalescent.

27. *Cerebral Atrophy.*—At the sitting of the Royal Academy of Medicine, of December 10, 1828, the following case of atrophy of the brain, together with a preparation of the diseased organ, was transmitted by Dr Dufresne. A female, 52 years old, seven years previously, had laboured under paralysis, which had succeeded to an attack of apoplexy. The paralysis which had affected the whole of the left side, gradually disappeared; but four months subsequently, the left inferior extremity became gradually contracted and afterwards the right. The contraction was accompanied by violent pains, causing the patient to scream aloud. The nutritive functions were but little affected, and the intellectual and sensitive faculties were unimpaired. Death took place suddenly, during the night, after the patient had uttered a few loud cries. On opening the body, an abundance of serum was found below the arachnoides, in its cavity, and within the ventricles. The cerebral vessels were engorged with blood. There existed on the right side a cavity or sac, formed exteriorly by the arachnoides of the surface of the brain, and internally by the arachnoides of the ventricle. This cavity

was placed between the anterior and middle lobes of the brain: it was filled by a very fine cellular tissue, containing a considerable quantity of a clear fluid. It occupied completely the situation of the corpora striata, which were entirely wanting, and of the optic thalami which were destroyed in great part. The ventricle was more than double its ordinary size. Its floor, to the breadth of more than an inch and a half, was formed by the arachnoides of the ventricle and that of the base of the brain, separated merely by a vascular cellular substance. The middle lobe and right peduncle of the brain had sunk down considerably, and the convolutions were much less prominent than natural. The contraction of the left inferior extremity was so considerable, that the thigh was applied to the abdomen and the heel touched the nates. The acetabulum presented completely outwards; the superior extremity of the tibia was luxated, and placed above and before the condyles of the femur. Dr GENDRIN, the editor of the Journal Général, from the February number (1829) of which we have extracted our account of this case, states that he has observed many similar cases. Upon the mode in which the atrophy of the brain is produced, he remarks, that when blood is effused in this organ, it is gradually taken up by the absorbents, and there remains a small serous cavity, produced by the inflammation to which the injury of the cerebral substance around the effusion had given rise. If this inflammation increases to a degree capable of either disorganizing the medullary pulp or of causing a purulent infiltration into the cerebral tissue, the disorganized pulp and the infiltrated substance are gradually absorbed, and nothing remains except the cellular structure of the brain. The augmented amount of fluid, found in the arachnoides and in the ventricles, is not, as M. DUFRESNE seems to think, a morbid condition. It simply results from the sinking down of the brain in consequence of the atrophy of its central parts, which causes the cephalo-rachidean fluid, that fills all the space not occupied by the substance of the brain, to be found in the greatest quantity at these parts.

28. *General Phlebitis.*—F. Gibeau, aged 28 years, was delivered of twins July 8th, 1826. On the 9th and 10th, she appeared very well, though the lochial discharge was scanty. On the 11th, her breasts were swollen and painful; the pain extending to the axillæ, and along the left side of the chest, with rigors, fever, some delirium, diarrhœa, and vomiting. Pains were now experienced in several articulations, and on the 14th she was brought to the hospital. Her countenance was now pallid, features shrunk, tongue coated, dry and red, with thirst. Abdomen tense and tender on pressure; diarrhœa, vomiting, quick pulse, cough, and oppression. There existed a large umbilical hernia easily reducible. The knee joints were red, swollen, and painful; the lower extremities œdematous, tense, shining, white, elastic, and did not leave pits on pressure. It was concluded that she laboured under phlegmasia dolens, (œdeme actif des nouvelles accouchées). Twenty ounces of blood were drawn from the arm; the patient was placed upon the most restricted diet, and emollient cataplasms were applied to the breast and abdomen. Venesection was repeated the two succeeding days; the blood much inflamed. The left arm became now the seat of considerable pain. On the 19th of July, two gangrenous spots were discovered on the right mammæ, and the same upon the labia pudendi. The left arm was affected with a similar swelling to that in the lower extremities. The phlegmasia which had thus extended itself to so many organs, was now treated by the tartrate of antimony, given to the extent of 6 grains per diem. This treatment was continued for six days, during which time the diarrhœa ceased, but the œdematous swellings remained. On the 30th of July, the diarrhœa returned, and continued until the 15th of August, when the patient died.

Sectio Cadaveris. In the lungs, some points of hepatization, but no purulent deposites. The pharynx and œsophagus, completely lined with an exudation similar to soft mortar, forming a tube that reached to the cardia, where it terminated. The mucous membrane of the œsophagus was pale when exposed. The peritoneum was healthy, as was also the mucous membrane of the stomach and intestines, with the exception of a few points in the colon. The uterus was about the size of the fist, its cavity being filled with a sanguineo-purulent fluid:

its parietes were livid, and, towards the fundus, in a state of softening. Extensive suppuration existed about the left shoulder joint, but the other articulations, which had been the seat of swelling and inflammation during life, were now collapsed and colourless. The principal veins of the left arm were filled with a white tubular concretion, not adhering to the internal surface of the vessels. These concretions were themselves filled with pus, similar to that found around the joint. The internal coats of the veins were remarkably pale. The iliac veins contained polypous concretions, very different from those just described. The hypogastric and femoral veins, however, presented tubular concretions filled with pus, down to the ankle. Finally, the pulmonary arteries presented the same appearances as those described in the veins. The relater of the above case conceives, that the tubular concretions discovered in the veins cannot be legitimately referred to phlebitis. "I am rather disposed," he remarks, "to believe, that these concretions were formed at the expense of the blood itself, and that they were the consequence of a mixture of pus; that is to say, of an inorganic fluid, with one endowed with life."—*Revue Medicale.*

29. *Phlegmasia Dolens in a Male.*—H. F. aged 15 years, was admitted into La Charité, July 7th, 1828. He had acute pain in the right groin, augmented by pressure, and in this part was felt a small tumour. The abdomen was slightly painful; there was some diarrhœa; the tongue white in the centre, and red at the point; cephalalgia; pulse hard and frequent; heat of skin; thirst. He dated his disease only from the preceding day, and could assign no cause for it. *Diluents—injections.* 8th. In addition to the above symptoms, there is an erysipelatous redness at the lower and inner side of the right leg, to the extent of a hand's breadth; from this, stripes of redness ascend to the groin. These were extremely painful on the slightest pressure. The inguinal glands are now unequivocally enlarged, the thigh and leg swollen and tense; but no pit remains upon pressure. The patient is unable to move the limb in the slightest degree, without the most acute pain. *Venesection to* 12 *ounces—fomentations—injections—diluents.* 9th. The red stripes are more vivid and clearly defined, and are very painful. They do not follow the course of the internal saphena vein, which is neither hard nor tender to the touch. The blood drawn was inflamed. *Venesection repeated.* 10th. Blood last drawn not inflamed. The redness of the stripes, and swelling and tension of the limb are diminished; the inguinal glands, smaller. *Venesection to* 6 *ounces.* 11th. The blood again inflamed. Large phlyctenæ have formed on the lower part of the leg. 12th. The extreme pain felt in the course of the inflamed lymphatic vessels, is nearly gone. From this time, the general and local symptoms declined, and the patient was discharged cured, with the exception of some œdema of the limb. M. Littre, who reports this case, under M. Lerminier, considers it one of phlegmasia dolens, and that the inflammation was seated in the lymphatic glands and vessels. There is certainly great similarity in many of the symptoms; but the red lines in the course of the absorbents are not usually observed in the puerperal disease. That the inflammation, in this case, was not seated in the veins, is as certain as any thing can be, where dissection has not been put in practice.—*Jour. Hebdomadaire from Med. Chirur. Review, April* 1829.

30. *Latent Tubercular Phthisis—Pneumo-Thorax.*—A young man was admitted into the Hôtel Dieu, July 26th, 1828. He had been affected, for three months previously, with cough and diarrhœa; had never spit any blood. When he came to the hospital, the symptoms were those of chronic enteritis. He coughed but little, with a trifling expectoration destitute of any purulent character. He was put under a mild, soothing regimen, with tepid baths and anodynes. After more than two months sojourn in the hospital, he found himself so well as to request his discharge. On the evening preceding the day of dismissal, he was, however, seized suddenly with a violent pain, extending from the left flank to the præcordia. This pain was so intense, and its seat so well defined, that it was immediately concluded that a perforation of one of the intestines had

taken place, with escape of its contents. There was no tenderness of the abdomen, however, on pressure, which caused some doubts as to the existence of so serious an accident. The pain continued during the next day without increasing. The chest was now examined: in the right lung the respiration was very loud—puerile. The naked ear being applied to the left side of the chest, the metallic tinkling was heard from time to time. On employing the hippocratic succussion, the collision of two fluids of unequal density was heard. Pulse frequent; decubitus more easy on the right than on the left side. Pneumo-thorax was now evident. In a few days the symptoms in some degree mitigated, and the patient was able to walk about the ward. The left side of the chest was bulged out. A week afterwards he died instantaneously, after getting up and taking some breakfast. Upon opening the right side of the chest, the heart was found in that side opposite the sixth rib. The inferior lobes of the right lung were sound; the superior lobe was studded with tubercles, some of them softened down. When the left cavity of the pleura was opened, a rush of gas came forth, without any particular smell. The lung was compressed against the spinal column, and covered with a layer of whitish coagulable lymph. There was a considerable effusion of clear serum in this side of the chest, containing numerous shreds of coagulated lymph. A blow-pipe was now introduced into the trachea, and air thrown into the lungs. This soon made its way through two apertures in the pulmonary tissue, and bubbled up through the water affused in the chest. This explained the cause of the pneumo-thorax. There were some distinct ulcerations in the mucous membrane of the ilium.—*Journ. Hebdomad. ibid.*

31. *Œdema of the Glottis.*—A man, aged 46 years, entered the Hôtel Dieu of Nantes, on the 29th of November. Four days previously he had been exposed to a current of cold air, while in a state of perspiration, soon after which he was seized with sore throat and difficulty of swallowing, followed by a sense of burning heat along the trachea, and constant cough. The oppression, difficulty of breathing, glairy expectoration, &c. increased; and when he entered the hospital, he was in a very dangerous condition, each inspiration being effected with great labour. His face was of a violet colour; pulse hard and full. The alum insufflation, employed twice. This caused some irritation at first, and much cough, during which he inhaled with considerable difficulty. Afterwards the breathing became more easy, he was nearly seven hours without coughing, and the night was passed in comparative tranquility. The insufflation was practised every day until the disease yielded. Very few other medicines were employed—none of any efficiency. Expectoration came on about the fourth day after he was received, and then the symptoms became much mitigated.—From the clinical report of A. Laennec, M.D., Physician to the Hôtel Dieu of Nantes.—*Med. Chirurg. Review, Ap.* 1829.

IV. THERAPEUTICS, MATERIA MEDICA, AND THE PRACTICE OF MEDICINE.

32. *Combination of Belladonna, Ipecacuanha, and Sulphur in Pertussis.*—In Horn's Archives for 1827, Dr Kahleiss first directed the attention of physicians to this combination, the efficacy of which he had established, by its employment in nearly 100 cases of the disease. In Hufeland's Journal for February of the present year, he states that, since the appearance of the communication alluded to, he has had further opportunities of testing the value of the remedy, in consequence of hooping cough having several times prevailed epidemically. He directs for a child two years old, pulv. rad. belladon. gr. iv. pulv. doveri, gr. x. flor. sulph. ℈iv. sacchari ʒij.—M. f. pulv. xx. One of these powders is to be taken every three hours, and between each, a teaspoonful of the following mixture: syrup. liqu. ʒij. aq. chamæmeli ʒi.; acid. hydrocyanici Vauquelini gtt. xii.—M.

With many children of the above age, and even some months younger, the dose of the belladonna here directed, will not be sufficient to reduce the frequency or violence of the cough. In these cases, it must be increased to five or six tenths of a grain in each dose, and an additional drop or two of the acid may be added to the mixture. For children of from 9 to 15 months, each powder should contain from an eighth to a sixth of a grain of the belladonna; one-fourth to three-eighths of a grain of the Dover's powder, and three-fourths of a grain of sulphur. For a child three years old, one-fifth of a grain of belladonna; four to five years old, one-fourth of a grain; six to eight years old, three-eighths of a grain; ten years old, half a grain.

In some cases, the effects of the remedy are not perceptible, until it has been continued for 5 or 6 days. The paroxysms of the disease will now become less frequent, and soon after diminish in severity. By 8, 10, or at the farthest, 12 days' longer continuance of the remedy, the disease will be completely removed.

In a few instances after 2 to 4 days' employment of the above prescription, in the doses indicated, a dilatation of the pupils, and a scarlet efflorescence over the whole body, will be produced. The remedy, in such cases, must be omitted for 24 or 36 hours, and then resumed with a less proportion of the belladonna. The mixture containing the acid need not, however, be discontinued.

33. *Specific for the Hooping Cough.*—In Rust's Mag. f. die gesammt. heilk. (No. 2, 1828), it is stated that Dr MEYER, of Minden, has, in a few days, been enabled to remove all the symptoms of pertussis, by the external application of morphia. He directs a small blister to be applied over the præcordia; the detached cuticle being removed, the exposed surface is to be sprinkled over with half a grain of morphia, rubbed up with starch. The morphia to be repeated every evening. The only internal remedy he employed was an emetic. If necessary, the blister may be re-applied every third day. In five cases, the disease was so far diminished in 8 days, that no further treatment was considered necessary.

34. *Deleterious Effects from a Combination of Nitre and Sulphur taken internally.*—A country woman, labouring under a tertian ague, took a large dose, nearly three drachms, of a popular febrifuge, composed of a mixture of nitrate of potassa and sulphur, in some spirits, shortly before an expected paroxysm. Shortly after the remedy had been swallowed, she was seized with an intense burning at the stomach, with vomiting, cold extremities, pale, haggard countenance, and delirium. Dr KEIBEL of Stargard was requested to see the patient, and found her labouring under the above symptoms, with a small, oppressed pulse, and tremors of the hands and feet. He ordered 20 leeches to the epigastrium, the bites of which to be allowed to bleed freely after their removal. Flaxseed tea was directed to be administered to favour the vomiting, with injections of an infusion of chamomile, linseed oil, and common salt—sinapisms to the extremities. By this treatment the violence of the symptoms was abated. An emulsion of aq. chamæmeli, ol. amygdal. dulc. and ext. hyosciam. was now prescribed. In a few days all symptoms of gastric disease were removed. The intermittent fever still continuing, the sulphate of quinia was administered, by which the paroxysms were speedily arrested. For the above case we are indebted to RUST's Mag. f. d. gesammte heilk. Vol. XXVIII. No. 3, 1829.

35. *Solution of Nitrate of Silver in Diseases of the Eye.*—The Journal Für Chirurg. und Angenheilkunde, Vol. XII. No. 1, 1828, contains an abstract of professor GRAEFE's clinical report of the Institute for Surgery and Diseases of the Eye of the University of Berlin, for the year 1827. In this, among other interesting particulars, it is mentioned that the efficacy of a solution of the nitrate of silver, dropped into the eye, or applied by means of a hair pencil, as a remedy in obstinate cases of blennorrhagia oculi, the employment of which was noticed in a preceding report, has been confirmed by the experience of the present year.

36. *Acupuncturation.*—Three cases of acupuncturation, performed in a somewhat novel manner, are related by Dr Most of Rostock, in Graefe and Walther's Journal, Vol. XII. No. 3, 1829.

Case 1.—A taylor of a meagre habit, had been affected for about six months with a periodical convulsive motion of the right leg, the limb being involuntarily thrown into alternate flexion and extension. A variety of remedies had been employed without benefit. Acupuncturation was resorted to. A needle of copper was introduced through the calf of the leg to the bone, and another of silver into the glutæus muscle: from this scarce any pain was experienced. The needles were now connected together by means of a fine brass wire; when instantly the patient experienced a sensation of cold and itching in the thigh: after fifteen minutes the needles were withdrawn. The convulsive motions of the limb were suspended, but returned three days subsequently. The acupuncturation was repeated every third day for fourteen times; but as only a temporary benefit was derived, it was finally abandoned.

Case 2.—In 1826, a butcher, from exposure to cold, contracted a rheumatic affection of the right arm. By the usual remedies, venesection, leeches, nitre, and blisters, the fever, and local pain and inflammation were removed, but a degree of lameness still continued in the arm. In this case, one needle was introduced into the pectoral muscle, and the other into the deltoid, and connected together as in the above instance. During the continuance of the insertion of the needles, the same sensations were experienced as by the first patient. By the third application of the remedy, the motions of the arm were so far restored, that a pitch plaster to cover the shoulder was considered fully sufficient to effect the cure. The patient has remained to this day free from all disease.

Case 3.—A washerwoman, 36 years old, had suffered for four weeks from a severe rheumatic pain of the left side of the back. One needle was inserted above and another below the seat of pain, and connected together as above. Almost instantly all pain was removed, the patient experiencing merely a dragging sensation at the points at which the needles were inserted. From these latter, it was discovered on the next morning, that a slight discharge of an acrid matter had taken place, inflaming the skin over which it passed. The subsequent evening the pain returned, but was quickly removed by a diaphoretic of elder tea and rob sambuci.

37. *Chloride of Gold in Diseases of the Eye.*—In Rust's Magazine, Vol. XXVIII. No. 1, 1828, is contained an article by Dr Jahn of Meiningen, upon the local employment of a solution of the chloride of gold in certain diseases of the eye. He states that for nearly a year, he has been in the habit of employing this remedy in "impetiginous, scrofulous, gouty, rheumatic, and simple chronic inflammations of the eye, as well as in the purulent ophthalmia of infants," and invariably found it to be a very powerful remedy. He directs two grains to be dissolved in six ounces of distilled water, some drops of which are to be introduced within the eyelids, and a linen compress, wet with the same, applied over the eye.

38. *Iodine in Vapour as a remedy for Phthisis Pulmonalis.*—Dr Berton, convinced of the inefficacy of the use of iodine by frictions, and of the risk attending its ingestion in the stomach, has directed the medicine to be inhaled under the form of vapour. The process is as follows. In a flask with two tubular openings, he puts diluted sulphuric acid, and on this projects a quarter or half a grain per diem, of the hydriodate of potassa: the iodine is promptly disengaged in the form of vapour, and this is inhaled by the patient through one of the tubes of the flask. The process is repeated from four to ten times in the day—the duration of each being from four to five minutes. Dr Berton had first assured himself of the innoxious nature of the air loaded with iodine vapour, by experiments on animals. Three consumptive patients, on whom the remedy was tried, were not only not injured, but seemed to be somewhat benefited. No very extraor-

dinary praise this of the new medication. Dr B. feels more confidence in its efficacy in chronic bronchitis.

39. *Intermittent Fevers treated by the Sulphate of Quinia, applied according to the Endermic Method.*—In the *Annali Universali di Medicina*, for November and December 1828, Dr SPERANZA gives an account of his successful treatment of fifteen cases of tertian fever, by the endermic method of applying the sulphate of quinia. In all of these the fever had appeared some days before he prescribed for them. In none except two was there any very manifest local irritation: and in these latter, the symptoms were gastric. Without giving to any of them purgative medicines, he had immediately a blister applied, and in most instances on the day of the febrile paroxysm: the sulphate of quinia was put on at the end of the fit, or at the beginning of the apyrexia. The arm was the place chosen for the application of the blister, as the most convenient for dressing. The skin was first strongly rubbed with concentrated vinegar, in order to hasten the formation of the serous sac by the blister. Immediately after raising the epidermis, eight to ten grains of the salt, mixed with a small quantity of ointment, were placed on the denuded surface. The sore was dressed on the second day, by removing whatever remained on its surface, either of ointment or membranous concretions. From the appearance of the residue, there seemed to be about one-half of the sulphate of quinia absorbed.

The adoption of this method was followed in most cases by the disappearance of the fever even after the first application of the medicine, and without the necessity of recourse to a second.

Not only were fevers primitively of a tertian type treated in this way, but also others, which had been at first continued, before being intermittent. In no cases was there a relapse, which is quite common after the use of sulphate of quinia internally. In some subjects, in whom different organic affections required the use of evacuants or tonics, after the disappearance of the fever, this latter was not found to return after this secondary treatment.

No irritation of the neck of the bladder or urinary organs occurred, after the application of the blister in the febrile paroxysm. In some cases the inflammation of the arm, consequent on vesication, ran so high as to require topical remedies.

40. *Experiments on the action of Morphia and its Acetate.*—Dr BERAUDI, of Turin, has recently made numerous experiments on the effects of morphia and its acetate, on himself and his young friends REBUNI, CRISPIO, and ALLINIO, students of medicine. We have not space for all the details; and must content ourselves with the chief results. Ingestion of the acetate of morphia, by the above named gentlemen, in doses varying from an eighth of a grain to a grain, dissolved in distilled water, was followed by dilated pupil, increased frequency of pulse, deep coloration of face, weighty feeling about the head, painful sensations in the epigastric region, extending sometimes to the bladder and genital organs; nausea, large drops of sweat from the cutaneous surface, drowsiness, sleep, often restless. On awaking, acute pain in the region of the frontal sinuses was often complained of, with nausea, abdominal uneasiness, and intestinal disturbance, as in diarrhœa; itching of the skin, and a papular eruption on it. Generally a bitter taste was experienced in the mouth and fauces after swallowing the acetate—frequently the tongue became red at the tip and borders. The lassitude following the more marked effects of the medicine was, in some instances, extreme, and occasionally a pain and sense of stricture were felt in the fauces at this time.

The effects produced by the solution of the morphia in alcohol, were not different from those following the ingestion of the acetate.

M. ALLINIO, aged 22 years, of a bilious temperament, who swallowed an eighth of a grain of the acetate of morphia in two ounces of distilled water, had his pulse raised in 30 minutes, from 66 beats to 94 in a minute—a copious sweat at the same time bathing all his skin. M. CRISPIO's pulse was increased from 60 to 79 beats in a minute, after taking the sixth of a grain of the acetate in distilled water.

M. Rebuni, after swallowing one eighth of a grain of the salt, experienced no other effects but an acceleration of pulse from 63 to 108 beats in a minute in the course of half an hour, and a slight redness of the eyes and point of the tongue.

The editors of the *Archives Generales*, from the March number of which we have gleaned the preceding summary, conclude the translation of the entire account of the experiments from the *Annali Universali*, by remarking that they are adverse to the opinions of M. Bally, who denies that the salts of morphia produce any effect, even of a sympathetic nature, on the mouth, pharynx and tongue; but that they are, on the other hand, confirmatory of the experiments tried by M. Chevallier on himself. (See *Rev. Med. Fevrier* 1824.)

41. *A Combination of Iodine and Morphia in Glandular Affections.*—M. Gabriel Pelletan gives, in the *Journal de Chimie Médicale, &c.* the history of a lady of a nervous temperament, prone to glandular inflammation, especially of the mammæ and uterus, on whom extirpation of a diseased mammary gland had been practised some years before, finally cured by iodine and morphia. For the disease of the uterus accompanied by pain of the part and swelling at the right side of the hypogastric region, bathing and leeching of the vulva were prescribed with some effect. After this, ointment of the hydriodate of potassa of the size of a small nut was rubbed on the tumour every evening. At the end of four days a general agitation and painful digestion were observable. The ointment was discontinued; and renewed after some days had elapsed. The same unpleasant symptoms again appeared, and after several trials of this nature with always similar results, its use was entirely abandoned. Other measures, adopted by M. Gabriel Pelletan, were attended with happier results, and in about two years from this time the uterine engorgement seemed to be sensibly diminished. Now, however, were felt pains in the left mammæ, which, for a while obscure, became finally very intense. M. Pelletan, Senior, who had extirpated the diseased mammary gland fifteen years before from the patient's breast, was again consulted. Leeches were twice applied to the pained part with advantage; a third application was attended with no good effect. Compresses of different kinds were abandoned; all moist bodies aggravated the pain.

M. Pelletan the younger (Gabriel), on whom the treatment of the case again devolved, had recourse to the practice which was successful two years before, viz. warm bathing, small doses of castor oil, and syrup of hyosciamus, but in vain. A month having elapsed in this course, he determined to try the iodine once more as follows:

Take hog's lard, one ounce; protiodide of mercury, six grains; acetate of morphia, eight grains: Mix accurately. Of this about the size of a small nut was rubbed on the diseased gland every day. In lieu of the leeches a bleeding from the arm was practised, as the patient had attained that age when the menstrual discharge would probably cease. This gave great relief. A perseverance in the use of the ointment for three months, did not give rise to any of the sinister effects from which the patient had suffered by its use on former occasions. The engorgement of both breast and uterus diminished progressively, and in the month of August 1827, there was no vestige of disease. At the time of writing the history of his patient, December 1828, M. Pelletan declares her health to be excellent.

During the period of eighteen months, he tells us, that the hydriodate of potassa and the proto and deutiodide of mercury united to the acetate of morphia and lard, have been employed successfully in a case of goitre, in another mammary glandular engorgement, and in a lymphatic enlargement of the tissue of the skin, in consequence of the bite of leeches. Finally, he cites the case of an Englishman, treated unsuccessfully for two years in London, for a disease of the liver, with intense jaundice, and to whom large doses of calomel had been given, cured completely by means, 1. Of simple baths and decoction of saponaria. 2. Sulphurous baths taken in the country, mild purgatives, waters of Vichey for drink, a light nutriment, and during the whole period, frictions over the region of the liver with the following ointment: hog's lard, one ounce; deutio-

dide, six grains; acetate of morphia, six grains. From all these facts the author concludes that morphia may be regarded as one of the means most capable of diminishing the general inconveniences from the preparations of iodine.

42. *Iodine in White Swellings.*—M. BAYLE gives cases (Rev. Med. Fev. 1829), of the efficacy of this medicine in tincture, externally and internally applied, for white swellings.

43. *Chlorine in Hydrophobia.*—M. JULIA FONTENELLE, in one of his clinical lectures, after mentioning the experience of Drs SCHOENBERG and SEMMOLA in favour of chlorine applied to the wound, and taken by the mouth, diluted in water, as a cure for hydrophobia, thinks that the chloride of soda might be advantageously substituted internally for the chlorine. M. COSTER strongly recommends the application of chloride of lime to the wound, as capable of completely neutralizing the poison.

44. *Inflammations produced by the Use of Mercury.*—Under this head we read a paper by Dr VAN DEKEERE, in the *Journ. Gen. de Med.* for January, in which the author indicates, as the effects of a mercurial treatment, inflammation of the gums with ptyalism, angina, bronchitis, gastritis, enteritis, colitis, (diarrhœa and dysentery), separately or combined. *Gastro-intestinal disturbance* is, according to him, nothing but mercurial gastro-enteritis. Cases of such phlegmasiæ as those enumerated above, occur among persons treated for syphilis by the use of mercury in the proportion of 46 to 116.

45. *Treatment of Tænia.*—The Prussian government, influenced by the favourable report lately made to them on the subject, by a committee of physicians, has purchased the account of the method followed by Dr C. A. SCHMIDT, in the treatment of tape worm, by settling on him a pension of one hundred and fifty dollars a year.

His plan, published by the government, is as follows. We have not room for the very long details on the subject, in the German (HUFELAND'S) Journal.

The patient affected with tænia, is to take during the first day, every two hours, from morning until seven o'clock in the evening, two spoonfuls of the following mixture:

No. 1. Valerian root, powdered, 6 drachms.
Senna leaves, 2 drachms.
Make an infusion of six ounces, and add
Sulphate of soda, crystallized, 3 drachms.
Syrup of manna, two ounces.
Oleo-saccharum of tansy, two drachms.—M.

The patient is to take coffee strongly sweetened, but without milk. At twelve o'clock, he uses only meat broth, and some slices of meat and herring roe. At eight in the evening he eats a salad made with herrings, raw ham hashed, an onion, a good deal of oil and sugar. Most frequently portions of tænia are passed during this day, and even in two cases, M. SCHMIDT has seen the worm expelled entire.

The second day, the patient is to take, beginning at 6 o'clock in the morning, 6 of the following pills:

No. 2. Assafœtida, extract of dog's grass, *aa*, 3 drachms.
Gum gamboge, rhubarb, jalap, of each in powder, 2 drachms.
Pulverized digitalis leaves, ipecacuanha, sulphur of antimony, of each, 2 drachms.
Calomel, 2 scruples.
Ethereal oil of tansy and aniseed, each 15 grains.
Mix into a mass and make pills each of two grains, to be preserved in a phial.

These pills are to be swallowed in a tea spoonful of syrup. Half an hour after the first dose, the patient is to take a table spoonful of castor oil, and during the day, plenty of coffee, well sweetened. Usually, the worm is expelled about two o'clock in the afternoon. If not, the pills are to be continued, taking at the same

time, a spoonful of castor oil with sugar, if only fragments of the tænia are expelled; and until the evacuations exhibit no more remains of it. For food, the patient takes some soup at noon, and in the evening, a broth of flour or meal, with some fresh butter and sugar. The author advises the use of the pills next day, in order to be sure that there is no *nest*, as he calls it, *of the tape worm left*.

In order to prevent relapses, it is proper to eat, from time to time, salad of herrings and horse radish, (raw) with vinegar and sugar; and still to take for some days longer one or more doses of the pills.

The course being finished, a more substantial regimen is allowed, such as soups, the meat of young animals, chicken, pigeon, yolks of eggs, and good wine in a small quantity; some bitters are also prescribed.

When not sure of the existence of tænia, we can determine it by the following means:

In the evening, the person is to eat salad of herrings, and to drink a good deal of sugar and water: the next morning he will take the following powder in syrup:

Pulverized jalap, 15 grains.
Wormseed, (sem. contra), 10 grains.
Gamboge, calomel, of each, 6 grains.
Oleo-saccharum of tansy, 1 drachm.

After this the patient is to swallow coffee well sweetened, and very fat broth. If he be affected with tænia, rings of this worm, and sometimes the entire animal itself, will pass in the evacuations caused by the powder. Then we administer the pills No. 2, in order to produce a complete cure.

Out of 166 persons, of whom only 15 were men, 20 had but one tænia; all the others had several; one individual discharged as many as seventeen.

As may be readily anticipated by the reader, Dr SCHMIDT directs us to abstain from his method during pregnancy, or at the coming on of the menses; and also in cases of hemorrhoids and phthisis, &c.

46. *Acupuncturation in India.*—The London Medical and Physical Journal for February, tells us that the Hindoo physicians, when ordinary means have failed, in cases of diseased spleen, have recourse to the introduction of iron needles, heated red hot. They are plunged into the side, above the spleen in various places, according to the discretion of the operator, usually not fewer than seven, nor more than twenty. It seems likely that they penetrate its substance. The needles are made to penetrate to a considerable depth, according to the native's idea, through the spleen. The operation is attended with violent pain, but it is said rarely to fail of success.

47. *Acute Glossitis successfully treated by the Antiphlogistic Method.*—Professor SPERANZA gives the details of this case. It is of a Mr B. who had for a long time enjoyed excellent health, when from exposure to a current of cold air in July last, after great exhaustion by exposure to intense heat, he was seized on the following night with angina and inflammation of the tongue. It was not until two days afterwards that M. SPERANZA saw him. The tongue was then greatly swelled, red, painful to the slightest touch, and one half of it protruding out of the mouth. There was a copious flow of saliva, which irritated the lips—themselves swelled and painful. Deglutition could not be performed; the fauces and palate displayed great sensibility; respiration was painful, and suffocation imminent. The face was flushed and tumid, the eyes red and watery; headach continual, pulse hard and very frequent, skin hot and dry, nausea uninterrupted, urine in small quantity and high coloured, and constipation. Under these circumstances there was much to be apprehended, as well from the rapid increase of the inflammation, as from the symptoms of suffocation, which became more and more imminent. Dr SPERANZA had immediate recourse to bleeding from the arm and the application of leeches to the neck and under the chin; repeated enemata; and frequent lotions of the tongue, by a watery infusion of digitalis. Under

the operation of these means, the symptoms gradually diminished in intensity, so that on the sixth day the patient could swallow freely: his respiration was easy, the fever had nearly disappeared, and the tongue was reduced to almost its natural size. In conjunction with the above mentioned remedies, were employed diluent drinks and purgatives, which produced copious alvine discharges and an abundant flow of urine. On the ninth day there supervened a general sweat, which was the real termination of the disease, and from this time the convalescence was rapid.

Professor SPERANZA avails himself of this occasion to dwell on the advantageous effects of the antiphlogistic treatment in glossitis, and of lotions of the tongue, with the watery infusion of digitalis. He contrasts also the happy termination of this method of treatment, with the results obtained by those who laud the scarifications of the tongue in this disease.

48. *Bite of a Viper cured by the application of Cupping Glasses.*—An interesting case of this nature is related in the *Annales de la Medecine Physiologique* for December last. A child aged four years, of a robust habit, accompanied to the fields its father, who was a reaper. It had hardly been seated on the ground when it started up with loud cries. A viper is seen near it, endeavouring to escape. It was soon killed, and was found to measure ten inches in length. On looking at the hip of the child, two small red points, which gave issue to a little blood, were seen, surrounded by a swelling, which perceptibly increased. The wound was about two inches below the great trochanter, at the outer and posterior part of the thigh. The father applied the viper to the affected part, in order, as he alleged, to draw out the poison which the animal had when alive introduced; but alarmed at the rapid swelling, he had recourse to the more efficient means of tying a ligature round the limb above the swelled part, and posted off with his child on horseback, to find Dr M. The thigh, on being examined by this gentleman, two hours after the accident, was very voluminous; the band around the limb was sufficiently tight to prevent the swelling from passing it. The two wounds are like what would be produced by a sewing needle, and are about two lines distant from each other. A cupping glass is immediately applied; and in proportion as it acts, the swelling diminishes sensibly. The ligature is now cut. After the lapse of ten minutes, the cup is withdrawn, then re-applied after a lotion of liquid ammonia had been used, with a view of neutralizing the poison drawn out by the instrument. The operation is repeated until the swelling was reduced to the extent of surface covered by the cupping glass. A compress, moistened with liquid ammonia, is applied over this part. After the expiration of five days, the tumefaction was less, but firmer and more indolent. The child did not suffer any sinister effect.

Dr M. relates the case of a man bitten on the inner ankle by a strong and very lively viper, who having neglected to use a ligature, was seized with vomiting, a sense of suffocation, &c. and general tumefaction. Two hours after the accident, a draught containing ammonia was prescribed for him, to take in spoonful doses, and the pure ammonia was applied to the part. The symptoms soon disappeared; but the health of this man was affected for a long period afterwards. Dr M. regrets not having at that time been aware of the effects of cupping glasses.

49. *Case of Delirium Tremens, treated by Local Bloodletting and Purgatives, previous to the administration of Opium.* By A. H. RENTON, M.D. We shall give the account of this case in the words of Dr R. as found in the Edinburgh Medical and Surgical Journal for April.

On the 21st of October 1828, at nine A.M. I was desired to see M. De P., who, by his son's account, had fainted early in the morning, after a copious evacuation of the bowels, and had since been the subject of frequent fits of convulsions. His general habits are extremely intemperate.

I found the features puffy and bloated; the eye wild and suspicious; and the pupils contracted and impatient of vivid light. There was general tremor; and

the body, but particularly about the face and forehead, was bathed in cold perspiration. The tongue was loaded, tremulous; and the pulse 120, small and compressible. In answering my questions, his manner was agitated, but tolerably coherent. To his wife and the people of the house, his conduct was quite outrageous.

On my being about to leave the room he became suddenly insensible, and was almost immediately seized with a paroxysm of general convulsion, attended by foaming at the mouth, and some degree of stertor, ending in a state of stupor.

Twenty leeches were immediately applied to the temples, and a large blister to the nucha. Four grains of calomel and fifteen of jalap, are to be taken in the evening, and if need be, a common injection. [We give the English of the Latin prescriptions.]

22d. 10, A.M. The paroxysms have been less frequent, but the delirium continues unabated. He complains to me only of headach. The medicine has produced no effect upon the bowels. He is directed to take, as soon as possible, five grains of the cathartic extract; and half a drop of croton oil—to be repeated, if required, four times, unless catharsis should be first induced.

6, P.M. The first pill produced copious evacuations. Since which there have been no fits, but his manner is wild, and his conduct more extravagant than ever. The surface is cold and moist; the pulse rapid and small.

Pure opium twelve grains, camphor one scruple, are mixed and divided into six pills, of which the patient takes one every fourth hour.

23d. 11, A.M. Four pills have been taken, but there has been no sleep. He is much more quiet, however, and is evidently under the influence of the opium. Omit the pills.

6, P.M. He has dozed a good deal during the day, and has been much less troublesome. Pupils dilated. His manner is subdued and childish. Repeat the opium pills at bedtime, and if the delirium returns.

24th. He has slept during the whole night, and is now perfectly collected. From this time all went well.

Dr RENTON, who writes from Funchal, in the island of Madeira, thinks that had the opium been administered *at first*, there is reason to suppose that the individual might have been *forced* into a state of apoplexy, or have become the subject of hopeless organic disease. He refers to the case of an Englishman in a situation very similar to that just detailed, in which the same plan of treatment was pursued with an equally satisfactory result. "In general," continues Dr R., "when the head symptoms are not so prominent, on the bowels being thoroughly evacuated by the croton oil (a medicine of immense value in such cases, and in all others where the object is to have *a speedy* and *complete* evacuation of the intestines), I at once begin with opium."

50. *Is the Appearance of the Blood abstracted a Criterion of the Propriety of Venesection?*—Dr DAVY, physician to the forces, examines the above question in the Edinburgh Medical and Surgical Journal. He begins by saying that the appearances and qualities of the blood usually supposed to be indicative of inflammation, and to warrant rather than forbid further bloodletting, are the following: an unusual degree of fluidity of the blood the instant it is drawn; unusual slowness in coagulating; and when coagulated being covered with a buffy coat, and cupped.

Relative to these appearances and qualities of the blood, though met with in the majority of cases of local inflammation, it is however with shades, differences and exceptions, involving much difficulty and perplexity.

"1. When the inflammation is violent, rapidly running on to suppuration, and very extensive, as attacking at the same time more than one texture, or only the same texture, but in different organs, the blood drawn I have observed is often neither cupped or buffed. This I have witnessed most strikingly in cases of peritoneal inflammation, either pure or complicated, with inflammation of the mucous coat of the intestines, or with diffuse cellular inflammation.

"2. In diffuse cellular inflammation, I have often noticed that the blood coagulated rapidly, as rapidly as when in health, and yet, being unusually liquid, exhibited a slight buffy coat, provided the vessel used for holding it was filled in a few seconds, and instantly put aside, and allowed to remain undisturbed.

"3. In ordinary cases of inflammation, as of the pleura and lungs, the blood drawn at the commencement of the disease is occasionally not buffed or cupped; but on repeating the operation the following day, the blood exhibits both these qualities.

"4. In cases of inflammation of the mucous coat, whether of the air passages or of the alimentary canal, the blood drawn sometimes shows the appearances and qualities enumerated, and sometimes not.

"5. Experience does not seem to have established, even generally, any relation in point of degree between these appearances and qualities, and the intensity of the inflammation. Sometimes the buffy coat in the blood is very thick, and the crassamentum is much contracted, and the symptoms of inflammation are not violent, and the recovery is not long protracted; and sometimes the reverse of this occurs.

"6. In a large proportion of fatal cases, fibrinous concretions or polypi, as they were formerly called, corresponding to the buffy coat on blood drawn, are found in the heart and great vessels; and, as well as I can judge from my experience, as often when the lancet has been freely used or only moderately or not at all."

The author very naturally infers from the above that the appearance of the blood drawn is neither a just or safe criterion of the practice and repetition of bloodletting.

In next considering the contra-indications to venesection, as commonly believed to consist in a very soft crassamentum, very little, if at all, contracted; or the blood remaining liquid; or the proportion of crassamentum to the serum being unusually small; Dr DAVY does not think them conclusive or safe.

"1. In the remittent fever of hot climates, and in cholera morbus, both the common kind and the epidemic, the crassamentum of the blood drawn is generally softer than natural, and little if at all contracted, and yet, bloodletting in these diseases is not generally injurious; it is often beneficial even when repeated.

"2. Blood without fibrin in any disease is very uncommon. I have witnessed it only in cases of pulmonary apoplexy and that after death, in the cavities of the heart and bloodvessels; but so soon after death that it may be taken for granted that it was not a *post mortem* change; that it existed previously and was probably connected with, and partly the cause of, the fatal effusion. In such case, no one, I suppose, would have hesitated, if called in time, in abstracting blood, especially taking into consideration the plethoric habits of the individuals to whose cases I allude, and their previous apparently robust health.

"3. The proportion of the crassamentum to the serum being small, may often be witnessed in acute diseases in their advanced stage, or in acute diseases, supervening on chronic of long duration, or occurring to persons of great delicacy of constitution, of feeble health, and of valetudinary habits. In such cases no judicious practitioner would think of using the lancet, unless he considered it urgently necessary; and then surely he would not be prevented using it, even if certain of the blood being below par in respect to the proportion of crassamentum it might yield.

"Lastly, there is another and extensive and most important class of diseases (were a classification formed according to the appearances and qualities of the blood), in which the blood, as far as we have learnt from experience, is not apparently altered; as in the continued fever of summer, differing but little from the ephemera; as in the early stage of synochus; and as in apoplexy and tetanus, and many of the diseases strictly belonging to the neuroses, in the treatment of which bloodletting is often useful, and sometimes indispensable."

The author next adds a remark, for the justness of which most physicians will we apprehend give their approval, "that the more experience medical practitioners have, the less confidence they place in the appearances of the blood, in

forming their opinion on the nature of a disease and on the mode of treating it."

He gives the language of Dr HEBERDEN confirmatory of this sentiment. It is by the symptoms following the abstraction of blood, and not by the appearances of this fluid, that the cautious physician will consent to be regulated in his treatment of disease.

51. *Convulsions cured by a Warm Pediluvium and Cold Fomentations to the Head.*—(*Annales de la Med. Physiolog. Feb.* 1829.)—This was the case of a pupil of the military school at St Cyr, in whom the convulsions seem to have supervened on a violent fit of anger in a quarrel with some of his companions. Dr CASIMIR BROUSSAIS, the medical officer of the institution, had at first compresses wet with cold water applied to the temples and forehead, which gave some relief. This was followed by dry rubbing over the breast and epigastrium, at which, on being interrogated, he expressed much satisfaction. A very warm pediluvium gave great relief to his head and calmed the incipient delirium. Dr B. finding the pulse quick, full, and hard, was preparing to draw blood from the arm, when he was led to suspect that this young man, usually in the enjoyment of such perfect health, only suffered from mental agitation, and he determined on waiting a while. Gum water was his drink and medicine, except a portion of an antispasmodic mixture which a sister of the hospital had given the patient, but from a repetition of which she desisted at the instance of Dr B. Next day, after a rather restless night, he was quite relieved.

The author of the report of this case concludes by citing this as one of the many thousand others showing the relations of causality between the nervous pulp, as he calls it, and thought; and that the most efficacious antispasmodics are often those obtained from articles of hygieine, and in simple and temporary external revulsives.

52. *Gonorrhœa cured by Injections of Balsam Copaiba.*—Dr ELIJAH COONS of Tuscumbia, Alabama, gives, in the Transylvania Journal for May last, the account of a case of gonorrhœa, which ought rather to be called gleet or chronic gonorrhœa, cured, after other remedies had failed, by the use of balsam copaiba used as an injection four or five times a day. Diet spare; drinks mucilaginous. Seidlitz powders used to keep his bowels open. In a period of between two and three weeks he was quite well.

Dr C. had introduced a bougie into the urethra but did not detect any stricture.

He has since had two similar cases to the first, but of shorter duration, in which the same happy effect followed the above treatment. "Might not the balsam," he asks, "be injected in the early stage of gonorrhœa with advantage?" We certainly think not.

V. MEDICAL JURISPRUDENCE.

53. *On the Effects of the Sulphurets of Arsenic, Lead, Copper, and Mercury, on the Animal Economy.* By M. ORFILA.—The experiments respecting the three last mentioned sulphurets, as described in M. ORFILA's Toxicologie, not satisfying their distinguished author, he determined on prosecuting a new series of inquiries, the results of which are to be found in the *Archives Generales* for March, from which we borrow on the present occasion.

HOFFMANN, C. RENAULT, and some other experimenters, had established as a fact, that the pure sulphuret of arsenic was not poisonous, and that certain varieties of it met with in commerce, only became so by the arsenious acid mixed with them. It was on the other hand believed that the sulphurets of lead, copper, and mercury, were poisonous. M. ORFILA tells us that both these opinions are erroneous. The first mentioned sulphuret or that of arsenic, is, per se, deleterious,

while the three last mentioned ones exert no injurious action on the animal economy, or at most their effects are very slight.

Sulphuret of arsenic.—1. When we apply to the cellular tissue of the internal part of the thigh of dogs, 50 or 60 grains of the yellow sulphuret of arsenic, prepared by passing an excess of hydrosulphuric acid (sulphuretted hydrogen) into the arsenious acid, and washing it for several days, until the liquor no longer receives a yellow tinge from the hydrosulphuric acid, the animals experience the same effects which are produced by the different arsenical preparations, and they die at the expiration of forty, forty-eight, or sixty hours. *On opening the bodies*, the limb to which the sulphuret had been applied, is very red; the inflammation even extended to some distance over the abdominal parietes; the stomach exhibits one or more violet spots, or small brownish ulcers, the consequence of the destruction of the mucous membrane. The small intestines, rectum, liver and lungs, are in a natural condition. The *heart* is sometimes the seat of a remarkable alteration; the interior of the ventricles exhibits spots of a deep red, which are of some extent, and occupy chiefly the fleshy columns, penetrating also to at least a line and a half into the tissue of the heart. The auricles, aorta, and pulmonary tissue were of a natural appearance.

2. Analogous effects to the foregoing, are remarked, when 60 to 70 grains of the same sulphuret were introduced into the stomach, and the œsophagus tied to prevent vomiting. *On opening the bodies*, the digestive canal, liver, lungs, and heart presented the same appearances as in the preceding experiments.

3. Native orpiment from the mine of Tojova, in Hungary, applied to the cellular tissue of the thigh of several dogs, in the dose of one to two drachms, causes poisoning, and the animals perish at the expiration of about two days, as had been already observed by Mr Smith. *On opening the bodies*, the stomach is found to be inflamed; its mucous membrane covered with a semi-fluid varnish, allows a multitude of bloody drops to leak out; the small intestines exhibit some red ridges; the ventricles of the heart present internally one or more dark spots, extending into the fleshy tissue. The lungs are somewhat red.

4. The same native sulphuret introduced into the stomach of dogs, in the dose of a drachm, caused death at the expiration of fifty hours, without the animals having experienced other symptoms than prostration and alvine evacuations. The stomach contained a tolerably large quantity of a blackish fluid, thick and flowing; the internal membrane exhibited here and there red spots, evidently inflamed; the small intestines were healthy; the rectum internally presented a multitude of folds of a deep red; the fatty masses in the heart were red; in other respects this organ was healthy.

5. Forty grains of native realgar from the mines of Kapnic, in Transylvania, applied to the cellular tissue of the thigh of a dog, occasioned death at the expiration of six days. The digestive canal presented unequivocal traces of inflammation. (Smith.)

These experiments justify the conclusion, that the sulphurets of arsenic, both *natural* and *artificial*, are poisonous, even when they are *entirely* deprived of arsenious acid; though in truth their action is much less intense than that of this latter. Hydro-sulphuretted water may then act favourably in the first period of poisoning by arsenious acid, since it would tend to transform this acid, which is a powerful poison, into *yellow sulphuret*, which is much less active. The salutary effect, however, of hydro-sulphuretted water, will only be prompt and efficacious on the arsenious acid dissolved in water: the solid and hard particles not yet dissolved, would resist longer the decomposing power of the re-agent.

Sulphuret of lead.—An ounce of the black sulphuret of lead prepared with the acetate of lead and hydrosulphuric acid, was given to young dogs of a small size, which experienced no inconvenience from the ingestion. They did not eject the sulphuret by vomiting—sometimes they had an alvine discharge in the course of the day. It must be noted that this sulphuret was washed frequently with pure water, until the fluid thus used ceased to impart any colour to the hydrosulphuric acid.

It is very evident from the foregoing, that the dogs which died after being

made to swallow acetate of lead and sulphuret of potassa, did not perish in consequence of the sulphuret of lead produced in their stomach, but by the sulphuret of potassa, which is a very decided irritant.

The above results would lead to the employment of hydrosulphuric acid in cases of poisoning from the salts of lead during the first period, were it not more rational for us to make use of a very diluted watery solution of some sulphate, which will have the advantage of forming with the salts of lead an insoluble sulphate, possessing *no hurtful effect* on the animal economy, and the additional recommendation of being always at hand whenever we desire to make use of it.

Sulphuret of copper.—1. This salt was prepared by decomposing the sulphate of copper by an excess of hydrosulphuric acid, and carefully washing the product. Six drachms were given to a dog three months old, fasting. In ten minutes nausea and vomiting were produced, and the sulphuret was seen among the glairy and mucous matter ejected. On the following day the animal was quite well.

The vomiting was here attributed by M. ORFILA, to a partial absorption of oxygen by the sulphuret, and its consequent transformation into a sulphate, before it was swallowed.

2. An ounce of the same black sulphuret of copper, recently prepared and washed, until the water no longer gave any precipitate by the addition of the hydrosulphuric acid, was introduced into the stomach of a small dog fasting; the œsophagus was immediately tied to prevent vomiting. The animal made no effort to vomit on the following day; was a little dull. No pain or convulsive movements after this, and the animal died on the fifth day in a state of prostration, precisely similar to that seen in dogs not poisoned, but whose œsophagus had been tied for five, six, or seven days. (For the effects of this ligature, see *Toxicologie Generale, Tom. I. p.* 36, *3me edit.*)

On opening the body of this animal no traces of inflammation were observed either in the digestive canal, lungs, or heart.

Sulphuret of mercury.—1. This was prepared by adding to corrosive sublimate an excess of hydrosulphuric acid, and perfectly washing the black sulphuret. Of this half an ounce was introduced into the stomach of a young dog of middle size, fasting. After the lapse of seven hours, the animal, which seemed to have suffered no inconvenience, vomited twice. On the next and following days it was in excellent health.

2. Five days afterwards, half an ounce of the same black sulphuret of mercury was given to the same dog, and the œsophagus was tied immediately afterwards to prevent vomiting. Seven days from this time, the animal died without exhibiting any other symptom than that prostration which is the common effect of a ligature on the œsophagus. No sign of inflammation or organic lesion was presented in the examination of the digestive tube and other organs of this animal.

3. Half an ounce of artificial cinnabar, pulverised and not washed, was given to a small weak dog, without the animal experiencing any unpleasant effect during the ten days in which it was observed.

4. Half an ounce of the same cinnabar applied to the cellular tissue of the internal part of the thigh of a small dog, gave rise to no accident, and at the end of ten days, the animal seemed to be as usual.

5. Six drachms of vermilion (pulverised cinnabar), having been washed in distilled water, were given to a small dog, the subject of the preceding experiment; the animal did not vomit nor seem any more incommoded than by the external application of the sulphuret which had not been washed.

These facts, continues M. ORFILA, forbid us to doubt of the innoxiousness of the black and red sulphurets of mercury *when well washed.* They do not, indeed, agree with those already detailed in his Toxicologie, nor with those of Mr SMITH; but it is easy to perceive that in many of his former experiments, corrosive sublimate at first, and afterwards sulphuret of potassa, or sulphuret of lime, having been given to the animals, the decomposition of the sublimate by the sulphuret in the stomach was incomplete, or if the sulphuret of potass were in excess, it is to it that we must attribute the symptoms of poisoning. We can

only account for the deaths of animals resulting after the ingestion of the black sulphuret of mercury, by supposing that it had not been well washed and still contained a notable quantity of corrosive sublimate. Finally, in all the cases in which death was said to have resulted from the ingestion of corrosive sublimate mixed with *hydrosulphuric* acid, it is obvious that this latter had not been employed in sufficiently large quantity to decompose the deutochloride of mercury (sublimate). The learned experimenter does not pretend to explain the cause of the difference in the results of his and Mr SMITH's experiments, but believes the latter gentleman to have been led into error.

54. *Case of Intus-Susception which was liable to be mistaken for Poisoning, by* M. ROSTAN, *Physician to the Salpetriere.*—The reporter of this case tells us, that it merits attention under several points of view. As a pathological variety it is one of the most interesting which we meet with. In a medico-legal light, it shows us, 1. That there exist morbid phenomena which may so far impose on us as to induce the belief of poisoning. 2. How important it is for a physician to be familiar with post mortem examinations, and the attention demanded in these kinds of investigations.

The subject of the history, which we shall abridge from the *Archives* for March last, was Madame Saint Eloy, of Saint Maurice, more known under the name of Mademoiselle Hullin (Virginia), aged twenty-eight years, a dancer at the opera. She had been frequently subject to abdominal phlegmasiæ, which required for their removal a prompt and vigorous treatment. Three years ago she suffered from vomiting on the slightest cause, and could not digest the lightest food. By proper regimen and medicines, she recovered from this state in the hands of her physician, M. DUFOUR. Mademoiselle Hullin was married in September 1828, to M. Saint Eloy, of Saint Maurice: her health continued good until Tuesday the 17th of February. On this day she was seized with repeated vomitings of glairy matter, mixed with aliment; extreme agitation and anxiety; the abdomen was very little painful; the skin was not hot, nor the pulse full.

We forbear to detail all the symptoms on the following days; the more especially as there seems to have been no small difference between the account of them by M. DUFOUR, and that furnished by another physician. On the 18th of February, there were frequent fits of syncope, and desire to urinate and go to stool, but without any discharge ensuing.

A third physician, Dr G. was called in on this morning (Wednesday). Still a a most contradictory statement by the physicians.

On Thursday morning there was a violent pain in the right iliac region. This was met—by a goodly number of leeches to the part, or bleeding from the arm, our readers are ready to exclaim. No such thing; the collective wisdom of the doctoral triumvirate was displayed in their ordering a cataplasm, moistened with the liquid laudanum of SYDENHAM. The symptoms persisted until noon, when vomiting of highly coloured yellow matter, but inodorous, took place. Dr G. inquired whether the patient had not taken any thing to produce this coloration. The vomitings augmented in frequency of efforts and discharges. At two o'clock, they *had become blackish.* Carefully examined, they were found to consist of fecal matters. *It was thought that iliac passion might exist.* M. DUBOIS is sent for, but cannot come. At five o'clock, a bath (temperature not stated) is ordered. The patient remains in it two or three hours. No relief. The pulse is small, frequent, tremulous, the abdomen tympanitic, the features of the face changed. The patient expired at ten o'clock in the evening.

It will be some consolation to those of our friends who have such an especial dread of the prevalence of BROUSSAIS's doctrines and practice, to find from the preceding history, that they are not yet of general adoption in Paris. Shall we add, seriously, that if they had been, this woman might have been saved.

The sudden death and violence of the symptoms gave rise to sinister reports, involving the character of the husband, M. Saint Eloy. At the request of this latter, the body of the deceased was disinterred, and a juridical investigation

made by a physician, in the presence of the medical attendants of Madame Saint Eloy, and a justice.

No foreign matters were found in the stomach or intestines. The former *exhibited marks of inflammation.* The duodenum was of a rose colour, the jejunum began to assume a deeper hue, and the ileon presented the appearance of incipient gangrene throughout its entire extent: it contained also stercoral matters: the cœcum, colon and rectum, exhibited nothing remarkable. The organs of respiration, together with the heart, liver and spleen, were natural.

In reply to a question on the part of the judiciary authorities, the examiner alleged, that he saw no evidence of poison, but that chemical analysis would determine this. Neither *invagination nor strangulation of the intestine* could be seen by him. It was suggested that the gas developed in the intestinal canal might have removed the invagination. There was a swelling in the right iliac region.

A chemical analysis is recommended; at the same time that the *examiner himself sees nothing in this autopsia but a chronic gastro-enteritis.*

The law authorities, dissatisfied with this report, appealed to MM. ORFILA and ROSTAN, to give a chemical analysis and a pathological examination in the case of Madame Saint Eloy. The intestines were put into a suitable vessel, and sent to those gentlemen.

In reply to different questions proposed to them, they answer as follows.

There does not exist either in the stomach or intestines, any foreign matter which could be of a poisonous character.

The marks of violent inflammation which exist might be the effect of a poison of which no remains could be found; but the morbid appearances are sufficiently explained by the strangulation which the reporters discovered.

It is easy to learn by the state of the intestines the disease of which Mademoiselle Saint Eloy so suddenly died.

The state in which the intestines would be in case the person had been poisoned might be described, but there are deleterious matters which do not leave any sensible traces behind them.

In explanation of the allusion above to strangulated intestine, we must state that the reporters MM. ORFILA and ROSTAN, with whom at their own request, was associated M. J. P. BARRUEL chemical assistant to the faculty, having taken the intestines out of the sealed glass vessel and unrolled them, they discovered a strangulation of the colon, about three or four inches from the cœcum, and formed in the following manner:

A fatty appendix of about an inch in length and a line and a half in its greatest thickness, adherent by one extremity to one of the faces of the mesentery near the intestine, had contracted a morbid adhesion by the aid of a ligamentous band on the opposite face of the corresponding side of the mesentery, so as to include the ileon in the same way as a ring embraces a purse. [We should call this a strangulation of the ileon, not of the colon]. This cellular ring by compressing the intestine and intercepting thereby the course of alimentary matters and blood, explains in the most satisfactory manner both the symptoms during life, and the appearances after death; a violent colic, vomiting of fecal matters and constipation being the common symptoms of all strangulations. As effects of this condition are also marks of violent inflammation of the stomach and intestines, and gangrene of the parts adjoining the strangulation. The matters on the napkin which contained the intestines, were fat, blood and fæces.

55. *Sulphate of Copper mixed with Bread.*—About the beginning of the present year, thirteen bakers of Brussels were condemned, each to five days' imprisonment, and about six dollars fine, for mixing sulphate of copper, which they called *blue alum*, with their bread. They professed themselves ignorant of the deleterious effects of this salt, and alleged that they employed it on the strength of some French accounts, in which it was represented as making bread whiter and rise better. Five druggists who sold the sulphate of copper were also summoned before the court, but were acquitted on the plea of their not knowing the purposes for which it was intended.

VI. SURGERY.

56. *Polypus of the Vagina removed by the Local Application of Laudanum.*—In HUFELAND and OSANN's Jour. der Prac. heilkunde, (Feb. 1829), Dr KAHLEISS of Gröbzig, relates that, in the summer of 1819, an unmarried woman, 43 years of age, applied to him for advice. She stated that during three to four months, she had been subject to a discharge of blood from the vagina, continuing during the intervals of menstruation. About four weeks previously, it had increased considerably, and had greatly weakened her. The discharge was attended with no pain. She was directed to take a wine glassful of alum whey with cinnamon, daily: from this no benefit was derived. Other internal remedies, principally of an astringent and tonic character, were equally ineffectual. The hemorrhage had increased. The patient would not submit to an examination, and was not seen by Dr K. for eight weeks. She then returned, and informed him that four weeks before, whilst assisting in ironing clothes, she had felt something pass out from the vagina suddenly and with perceptible noise, and that in consequence, she now experienced some inconvenience in walking. An examination being permitted, a polypus was discovered, projecting two inches from within the labia. This had no doubt been forced down, during the exertions of the patient in ironing, through the very narrow opening of the hymen, which still existed in full integrity. The polypus was of a deep red colour, bled upon the slightest touch, and had a lanciform shape. Dr K. having often succeeded in removing nebula and leucomata from the cornea by the repeated application of the liquid laudanum of SYDENHAM, and once, in destroying completely, by the same means, a soft bloody excrescence on the head of a little girl, was induced to make trial of it in the present case. The polypus was well wetted with the laudanum twice a day. In twenty days it was so much reduced in size, as to fall within the opening of the hymen. It being no longer within reach, a canula was passed down to it, and through this was introduced a camel's hair pencil, steeped in the laudanum. In this manner, the whole of the polypus was completely destroyed by the end of the seventh month.

57. *Tumours on the Tongue.—Case* 1. A married woman, 36 years old, of a sanguineous temperament, during an attack of "angina rheumatica," for which she had employed a gargle of a decoction of blackberry leaves (Brombeerblätter), observed a small tumour upon the upper surface of her tongue, which gradually increased in size until it occupied the whole of its breadth. Dr STUCKO of Cöln was requested to see the tumour, 18 months after its first appearance: it then commenced about two lines from the point of the tongue, and extended backwards an inch and a half, being full one inch thick in the centre, and gradually becoming thinner towards its circumference. He was informed that latterly the increase of the tumour had been very rapid. It was without any pain even when strongly compressed. The patient had been previously affected with rheumatic pain of the head and fever, which had been removed by bleeding, blisters to the neck, and saline purgatives. In the opinion of Dr S. the tumour was produced by an effusion of coagulable lymph consequent upon a metastasis of inflammation to the tongue. He directed a gargle of a lukewarm decoction of "Hb. Scordii," in every eight ounces of which, a half ounce of muriate of ammonia was dissolved. The quantity of the muriate of ammonia was subsequently increased to an ounce. After six times employing this gargle, the tumour disappeared entirely, and the tongue returned to its natural condition. *Case* 2. A child, two years old, of a sickly hydrocephalic appearance, both of whose parents were syphilitic, for which disease, its mother had during her pregnancy been under a mercurial course presented a tumour upon the centre of the tongue, which had first appeared some weeks before it was seen by Dr S., and had in a short time increased to the size of an almond. Six grains of calomel, in doses of one grain morning and evening, were directed. By these, the tumour was reduced in size. The same quantity of calomel was then prescribed in half grain doses at the same periods; by which the tumour was en-

tirely removed. Six months subsequently, the tongue became again similarly affected, and the disease was removed by a repetition of the calomel. The third case is perfectly analogous to the foregoing: it occurred in a child somewhat older, and the same treatment was equally successful. The above cases are related in GRAEFE and WALTHER's Jour. f. Chirur. u. Augenh. No. 3, 1829.

58. *Extirpation of a Cancerous Tumour from the Neck of the Uterus.*—M. DUBOIS reported to the Academy of Surgery, the case of a female, from whom he removed a tumour situated at the neck of the uterus, and reputed cancerous. As the female had never borne children, some difficulty was experienced in drawing down the uterus to the orifice of the vagina. This was however accomplished by a ligature to the neck of the organ, and then the excision was made by means of a curved bistoury. Very little hemorrhage followed the operation.—*Bib. Med. Journ. Jan.* 1829.

59. *Extirpation of the Parotid Gland.*—We learn from the Nouv. Bib. Med. for January 1829, that M. FOUILLAY of Brest has extirpated a tumour of the parotid gland, regarded as cancerous, from a female aged 52 years, which had become painful and interfered with mastication, deglutition, and even respiration. The carotid artery was secured by a ligature at the commencement of the operation; the division of the smaller vessels did not render ligatures necessary, excepting to the internal maxillary artery. A deep and irregular wound remained, which was dressed by means of sutures. No accident supervened. The ligature from the carotid artery came away in fifteen days, and the recovery was complete in seventy-five days. M. LARREY suggests that there was no necessity for the ligature to the carotid artery, and that securing this vessel augmented the danger of the operation. In this opinion most of our American surgeons would probably unite, as they seldom resort to this measure in any of the important operations about the face or neck.

60. *Reduction of the Os Humeri at the Expiration of Five Months.*—M. LISFRANC has effected the reduction of the os humeri in a case of luxation forward, which had existed for five months. The arm was fixed almost in a parallel condition to the axis of the body. Extension was made by ten assistants, while LISFRANC, and his colleague, strongly pressed the head of the bone from below upwards, and caused it to enter the glenoid cavity. At the end of a month, no accident had occurred, and the patient could move his arm in every direction.—*Nouv. Bib. Med. Feb.* This man perfectly recovered, and left Paris to pursue his usual business.—*Arch. General. Feb.*

61. *Tumour of the Rectum Extirpated.*—An individual 30 years of age, had suffered for six months from a tumour in the rectum, about three inches above the anus. It was of an oval form, hard, irregular, ulcerated, moveable, the seat of severe lancinating pains, and presented great resistance to the passage of the fæces. M. MAURIN extirpated it, by making an incision to the extent of five to six lines through the posterior portion of the sphincter muscle. The tumour was gradually drawn down by means of a double hook (érignes) and then cut away with a pair of curved scissors. The tumour was of an oval form, somewhat flattened, more than two inches long, ulcerated on its exposed surface. It was developed immediately under the mucous membrane, and involved also this tissue but not the muscular coat. There was a free hemorrhage from the rectum which was arrested by a sponge, introduced into its cavity. To prevent contraction and adhesions, compresses of lint were introduced at subsequent dressings. Bleeding relieved the inflammatory symptoms which supervened, and in about two months the patient was discharged, perfectly cured.—*Nouv. Bibl. Med. Feb.* 1829.

62. *Excision of the Cervix Uteri.*—On the 11th of December M. HERVEY DE

CHEGOIN presented to the Academy of Surgery, the neck of a uterus, which he had extirpated five weeks previously. The patient complained merely of a slight pain at the moment when the cervix was drawn to the vulva, but did not feel the incision by which the neck was separated. No accident supervened; at the end of the third day her appetite returned, and at the above date she was quite recovered.—*Nouv. Bibl. Med. Feb.* 1829.

.63 *Rupture of the Ilium.*—Dr OTIS records in the second volume of the Boston Medical and Surgical Journal, a case of rupture of the ilium, in consequence of a blow with the fist on the abdomen. The patient suffered paroxysms of intense pain; and died thirty hours after the accident, preserving the powers of his mind to the last moments of life.

Dissection revealed peritoneal inflammation, effusion of the contents of the bowels, and a rent at the superior third of the ilium, large enough to admit the extremity of the thumb.

64. *Trephining.*—The operation of trephining has been successfully employed by Dr JAMES GUILD, of Alabama, in a case of epilepsy, in a gentleman 40 years of age. The disease supervened without any evident cause—there had been no fracture or depression, or other injury sustained; but as the fits returned very frequently and resisted the usual treatment, and as the patient suffered much from pain on the left side of the os frontis, while his general health was materially impaired, it was determined to perforate the bone. The operation was very painful, and excited nervous tremours: there was also an alarming hemorrhage from the diploe which soon however ceased, being followed by a serous discharge, and afterwards by suppuration. The dura mater and brain did not *appear* to be diseased; the latter pulsating regularly. As soon as suppuration was established, the patient's health improved; there was no recurrence of the convulsions, the pain disappeared. In thirty days the wound cicatrized, and the patient was discharged perfectly cured.

Dr G. suggests that the trephine will be found useful in "cases of lunacy, epilepsy, and a great many other affections of the head," hitherto deemed incurable. On what principle however, or under what circumstances it should be employed, he does not inform us.—*American Jour. of Med. Sci. May* 1829.

65. *Luxation of the Clavicle.*—In the Archives Generales for January, Dr F. MELIER has given an account of an apparatus for the anterior luxation of the sternal extremity of the clavicle, with which he has succeeded in preventing any deformity. He suggests that it will also be advantageous in fractures of the bone, where there is an angular displacement anteriorly. No accurate idea can be given of the apparatus without the assistance of a plate. We may, however, observe, that it consists of DESSAULT's apparatus for fractured clavicle, as modified by BOYER: to which is added a large oval compress, fixed by means of an iron plate to one extremity of a steel spring, (resembling in its form the common truss for hernia, but consisting of three plates). The other extremity is fixed to a rectangular steel frame, which is fastened to the corset behind, and is made to press on the scapula. The compress is applied over the luxated extremity of the clavicle, on which it is firmly pressed by the spring which passes over without touching the shoulder. The frame on the scapula not only affords a support for the spring, but greatly contributes to keeping the shoulder bone at rest, a point of great and acknowledged importance in injuries of the clavicle.

Dr M. applied this apparatus to a child four years old, whose clavicle had been dislocated at the sternum three weeks previously, so that much deformity had resulted. The apparatus was worn night and day without injury, for three months; no displacement occurred after its application, and when removed the bone did not in the least project, so that no deformity is observed. This, it is needless to observe, is an important circumstance, to females especially; and the success is much superior to that of other surgeons.

66. *Foreign Body in the Œsophagus.*—Dr J. B. Boileau has succeeded in extracting a piece of copper money which was lodged in the œsophagus, about an inch below the pharynx, where it had remained eight hours, causing much pain, and severe but ineffectual efforts to vomit. The patient could with some difficulty swallow liquids and soft aliment. Dr B. fixed a small conical portion of compressed sponge to the extremity of a piece of whalebone, and succeeded in passing the sponge thus secured into the stomach. Here he retained it, notwithstanding the patient's efforts to vomit, some minutes, until the sponge was distended by the fluids of the stomach. The instrument was now slowly withdrawn, the sponge completely occupied the canal of the œsophagus, and thus the foreign body was brought into the mouth with the sponge.—*Arch. General. January* 1829.

Our readers will remember the plate and description of the improved and valuable apparatus of Dr Bond, as presented in the 12th number of this Journal. Should his instrument not be easily procured, the means here recommended may sometimes be successfully employed.

67. *Tracheotomy.*—Dr Mazier performed this operation in the case of a child aged four years, in which a bean was drawn into the trachea. On opening the trachea, the foreign body did not present, but after some irritation, coughing was excited, and the bean was forced to the orifice, whence it was readily extracted. The wound was closed and in ten days the child was perfectly well.

He resorted to the same operation in the case of an infant aged fourteen months, apparently in articulo mortis, from an attack of croup. The trachea being opened, some portion of the false membrane was removed, and respiration was resumed, consciousness returned, and the infant *amused itself* (s'amusa) on the bed for about eight hours, breathing through the wound. During the absence of the surgeon, the dressing was disturbed by a fit of coughing, the wound closed, and in less than five minutes the child died.—*Archives General. March* 1829.

This last case is interesting, as it would prove that tracheotomy may be useful even when an adventitious membrane has formed in trachitis, a proposition doubted by most surgeons, and supported by very few positive facts.

68. *Popliteal Aneurism, cured by a Temporary Ligature.*—It is well known that a very large majority of American and English surgeons, recommend a round and narrow ligature for securing large arteries in cases of aneurism, anxious to obtain the obliteration of the artery, which they think can be most effectually accomplished when the internal and middle coats are ruptured. This practice they believe, is confirmed by experiment, observation, and analogical reasoning.

The distinguished Scarpa of Italy, and other good authorities are, however, opposed to this division of the internal coats, and believe that union and obliteration will more readily occur if this division be avoided, by employing broad and flat ligatures. Some surgeons have so much dread of inflammation and ulceration of the artery, as to advise a "*temporary ligature,*" allowing it to remain only for a few hours, believing that in such cases, the artery will often continue pervious—and the risk be always lessened. Although decided advocates for the practice first mentioned, we record with pleasure the following case, in which the temporary ligature proved successful, from the Archives Géneral. for March 1829. It occurred to Dr Folcieri, surgeon of the hospital at Bozzolo.

A. Rotelli, in the month of May 1828, discovered a swelling in the ham, very painful, so that the least pressure could not be borne. It presented the usual signs of aneurism. The pain was not relieved by any of the usual antiphlogistic measures, and as the tumour daily enlarged, the operation was performed on the 5th of June 1828. The crural artery was exposed on the front of the thigh, and was secured by a flat ligature, made with six threads—a small cylinder of linen, covered with wax, having been interposed between the vessel and the ligature. The pain was immediately relieved, the pulsations of the tumour ceased, and its volume was much diminished. The wound, except at the middle portion, where

the ligature was situated, was closed by adhesive strips. June 6th. Severe fever; very painful swelling of the wound; two bleedings in the day; a purgative enema, and a solution of cremor tartar as a drink. The bad symptoms diminished rapidly, and about the end of 24 hours, suppuration was established: the ligature and linen cylinder were removed; the lips of the wound were approximated and united with the usual rapidity. The aneurismal tumour daily diminished, so that by the 22d of August, no trace of it existed, and the patient was discharged perfectly cured.

69. *Varicocele.*—M. AMUSSAT has proposed to treat bad cases of varicocele, where it becomes a real infirmity, by tying up all the supplying arteries. He imagines that in most cases it will be sufficient to secure merely the spermatic artery. He has operated in one case: the disease was greatly lessened, and the testicle also diminished in size.—*Arch. Gen. March.*

70. *Ganglions.*—The pathology of the tumours thus named, has been little understood, and we therefore translate the following notice from the Jour. Univ. for Feb. 1829. M. DUPUYTREN no doubt was the first who has given a complete history of these tumours in his clinical instructions. He cites interesting cases to show that they are altogether foreign to the nerves. He has dissected them in the dead subject, and while extirpating them, he has designedly removed a large quantity of the cellular tissue, but has never discovered any nervous filament adhering to their surface. The names of ganglions, nervous ganglions, neurome, (névrome) painful sub-cutaneous tubercles, should be rejected, as they give a false idea of their nature and seat. M. VELPEAU has also satisfied himself by minute dissections, that these tumours are unconnected with the nerves.

Caused by accidents or some unknown cause, they are more frequently observed in the lower extremities, and are usually preceded by some pain in the part. At first of the size of a millet seed, they regularly increase, the pain becomes stronger, lancinating, sometimes intolerable, the patients not being able to endure the slightest friction from their clothes and their health declining. They should be distinguished from rheumatic inflammation, which, by attention, is generally very easily accomplished.

Extirpation is the best means of removing this affection. Caustics appear to M. DUPUYTREN to be injurious, as hastening the softening of the tumour without completely destroying it. If the skin covering the tumour be purplish, it should also be removed. If the swelling be already softened it should not be disturbed.

71. *Ligature beyond the Aneurismal Tumour.*—In Vols. I. & V. of this Journal, the reader will find a summary of the operations hitherto performed, in curing aneurism, by applying the ligature beyond the tumour. We find a case copied by the Boston Medical and Surgical Journal, in which Mr D. EVANS, surgeon, in Derbyshire, has followed the example of Mr WARDROP, with apparent success. William Hall, aged thirty years, accustomed to a laborious, active life, was affected with shortness of breath, troublesome cough, and tightness of the chest, especially after exercise. These symptoms continued for fourteen months, until the sixth of March (1828?) when he had an attack of bronchitis, with violent spasmodic coughing. On the tenth of March, after a severe cough, a pulsating tumour appeared above and on the right of the sternum: the patient's cough now mended, and his health was re-established. The root of the right carotid artery was considered as the seat of this aneurismal disease; and after some consultation with London surgeons, as to the propriety of a ligature *beyond* the tumour, this method was deemed improper. VALSALVA's method was adopted on the third of April, and continued until the thirteenth of July. During the first month, there was some improvement. In May, the general symptoms were unfavourable, and the tumour rapidly increased in size. It then remained stationary until the first of July, when it again increased until the twen-

tieth, when it reached as high as the cricoid cartilage, and by its presence, impeded respiration and deglutition. The pulse was weak, and other indications of exhaustion were manifest. On the twenty-second of July, the carotid artery was secured *above the tumour*, by a single ligature of strong silk. On tightening the ligature, the pulsation in the branches of the external carotid ceased. *The pulsation in the tumour continued without diminution.* On the twenty-third and twenty-fourth, pulsation in the tumour was stronger than before the operation, and the pulse in the right radial artery was more forcible than that in the left. Twenty-fifth, became feverish, was bled and purged. Twenty-sixth, better—pulse in right radial stronger than in the left, and pulsation of tumour very forcible. In the evening, pain and fever rendered bleeding necessary. Twenty-seventh, better in the morning; in the evening, much worse—delirious—anxious countenance, sickness, &c. Twenty-eighth, better all day. Twenty-ninth, at seven, A.M. became suddenly much worse, seemed to be dying; and now pulse in right radial hardly perceptible; whilst the left pulsated as strongly as it did on the twenty-eighth. There was also a profuse ptyalism. After several hours he rallied; appeared as well as usual, except that the salivation continued. From this time continued to improve; but from the twenty-ninth, (eighth day after the operation) a gradual diminution of the large arteries of the right forearm and arm commenced, terminating in complete obliteration of these vessels. This obliteration was attended with severe intermittent paroxysms of pain, chiefly felt in the course of the brachial and axillary arteries. The right arm wasted and became partially paralyzed, and continued to diminish for three weeks; at which time several anastomosing vessels were observed pulsating on the back part of the arm. As they enlarged, the limb slowly improved, but as yet, October nineteenth, has not attained its proper sensation or power of motion.

On the 11th day after the operation, he was attacked with intermittent paroxysms of pain in the right side of the head and face of the same character as that in the right arm, though not so violent, which ceased about October 5. The right side of the head and face became emaciated; but since the blood has found its way into the temporal and facial arteries, the right side of the face is nearly as plump as the left. The ptyalism continued from July 29th until the middle of September, about a pint of saliva being daily discharged: it ceased under the use of a small quantity of ale and a more generous diet. In three weeks he could sit up to his meals, but perceived that the whole right side was numbed and weaker than the left. On the 15th of August the pulsation of the tumour began rapidly to diminish, and by the 23d inst. could hardly be detected.

Oct. 19. The obliteration of the right brachial artery is now complete: the pulsation of the axillary artery can be felt. The pulsation in the right radial is scarcely perceptible, but increases daily. Motion and sensation in the whole right side of the body are increasing, but still are more feeble than on the left. The tumour has diminished about one-third, is hard and firm: on pressure laterally no pulsation is evident, but a feeble deep seated pulsation is felt on pressing from above downwards. The ligature had not come away on the 13th of October, but the wound was nearly healed. The patient's health was good, and he took daily exercise in a gig, or on horseback, having resumed his usual avocation, that of a butcher. Mr Evans attributes the profuse salivation to the state of the digestive organs; the obliteration of the brachial artery to a continuous inflammation of the internal membrane from the aneurismal sac, which inflammation was probably the cause of the severe symptoms noticed on the 8th day after the operation: the numbness and debility of the right side was in all probability dependent on the greater quantity of blood, circulating in the left hemisphere of the brain; for as the balance is restored between the two sides of the brain, these symptoms are disappearing. The patient's temper is more irritable and his memory weaker.

We have, with much pleasure, given the above summary of this very interesting case, as it illustrates many physiological and pathological phenomena, relating especially to the mutual and reciprocal influence of the bloodvessels and nerves.

We would also fix attention on the important fact, that the ligature on the carotid artery had no influence on the tumour, until the circulation was also interrupted in the brachial artery; then the tumour diminished, notwithstanding the vis a tergo from the heart. Hence, that a ligature, *ultra tumorem*, may be successful, all branches from the affected vessel must be secured, or in some way obliterated.

72. *Lithotritie.*—Mr Robert Liston, says the Edinburgh Med. and Surg. Journ. for April 1829, has performed this operation successfully; but the details, as given, are very unsatisfactory. It appears that a patient, aged 70 years, was admitted into the infirmary on the 10th of November 1828, who for five months had been suffering from symptoms of stone in the bladder. On the 13th of November, Mr Liston introduced Civiale's instrument, but did not succeed in completely grasping the stone; small portions were brought away by the fangs of the instrument and during the night. On the 15th he passed a barleycorn incrusted with calculous matter; another portion on the 16th. On the 18th a small abscess on the scrotum was opened. Instrument again introduced on the 25th, and the stone fairly laid hold of, but crushed by the grasp. Retention of urine frequently supervened from portions of calculi in the urethra. He passed in all thirteen fragments, having entire barleycorns for their nuclei, besides a larger number having only small pieces of the beards. It appears that during the preceding harvest, he had introduced a number of barleycorns into his urethra. After being sounded several times, and no calculus being discovered in the bladder, he was discharged cured 16th December 1828.

VII. MIDWIFERY.

73. *Abdominal Pregnancy.*—This very interesting case was published originally in a recent Danish Journal, by Dr Schulze, district physician for Soloer and Onthal, and translated for Hufeland and Osann's Journal, by Dr Schönberg, from which latter, we extract our account of it. A female, 44 years of age, had been delivered of eight living children, and thrice aborted. She became pregnant for the twelfth time in the spring of 1824. In her fifth month, she stated to her husband and neighbours, that she felt an unusual weight in the right side of her abdomen, and feared that her delivery would not be accomplished without danger. During the entire period of pregnancy, she regularly menstruated. On the 2d of January 1825, two weeks earlier than she anticipated, labour pains commenced. A midwife was sent for, who, upon examining the abdomen, and per vaginam, declared that all was not right. Next morning another midwife was called in. On examination, she found high up in the pelvis, a hard substance, which she supposed to be the head of the child: this could not, however, be moved by the hand, nor did it alter its position during the pains, which were very severe. The pains in a short time entirely intermitted, and continued off for some hours. Subsequently, the patient experienced, at intervals, severe pain in the abdomen, and a bearing down, insupportable sensation at the præcordia. The motions of the child, which had before been distinct and vigorous, even evident to the eye, were now scarcely perceptible. Towards evening the strength of the patient sank rapidly; by 11 o'clock she became insensible, and one hour afterwards died. The examination of the body was made by Dr Schulze. The abdomen was very much enlarged and tense. Its epidermis was of a mottled, blackish-blue colour, and detached itself by the touch. On the right side was a considerable protuberance, within which the form of the child could be detected by the hand. The external labia were very much swollen. The abdominal muscles, of unusual thinness, being divided, and the cavity of the abdomen laid open, the fœtus was discovered, exterior to the uterus, lying on the right side, in immediate contact with the mesentery. Its back presented anteriorly; the feet were bent upon the nates, and lay in the right lumbar

region. The face was thrust down between the uterus and rectum; the occiput being, in part, engaged obliquely within the brim of the pelvis. The left arm lay behind the neck, the right upon the breast. The fœtus had been enveloped by the usual membranes, which were, however, ruptured and disengaged from it. When the head was forced out from the pelvis, its posterior part was discovered to be very much swollen. On removing the fœtus which was now unattached to any of the surrounding parts, it appeared well formed and of the size and appearance of an ordinary child born at the full term of utero-gestation. It measured 18 inches in length, and weighed 8 pounds. The testicles were in the scrotum. The placenta had been attached to the mesentery, and was of the ordinary size and shape, as was also the cord. The abdomen of the mother contained a quantity of bloody fluid. The uterus was but slightly enlarged, but its parietes were rather thicker than in the unimpregnated state. On cutting into its cavity, its vessels were found somewhat engorged with blood. The other viscera were without any marks of disease.

74. *Delivery through the Parietes of the Abdomen.*—A female, thirty-three years of age, of a weakly constitution, pregnant for the first time, when near the period of her delivery (June 10th, 1825), fell down a flight of stairs. When she came to herself, she complained of severe pain in the abdomen; and a considerable discharge of blood took place from the vagina. She was placed upon an antiphlogistic plan of treatment, by which the pains and discharge were suspended. The patient, however, remained greatly prostrated. On the seventh of July, pains similar to those of labour occurred. The external parts of generation were tumid and slightly relaxed; labour, did not, however, appear to advance. There was an abundant discharge of mucus, streaked with blood, from the vagina, constant nausea, extreme debility, paleness, and constant humidity of the whole surface of the body, and a very rapid pulse. Since the fall, the motions of the fœtus had not been felt. In this condition, the patient remained for some days, when suddenly a large inflammatory swelling, with great pain and intolerable burning, made its appearance, in the vicinity of the umbilicus. The external parts of generation remained moist and swollen, but undilated. The tumour opened spontaneously on the 14th, and discharged an inconsiderable quantity of a very offensive matter. In the afternoon, the opening was about an inch in diameter, and through it was perceived the fœtus, in a state of complete putrefaction. The hip was brought through the opening with some difficulty—it readily detaching itself from the residue of the fœtal body; the thigh and leg followed, and the remaining parts, together with the membranes, &c. were removed piecemeal, by a common lithotomy forceps. During the removal, which occupied full two hours, tolerably active contractions, with pain of the uterus, were experienced. The opening was covered with dry charpie; it being, however, previously washed out by injections into it of lukewarm water and chamomile tea, *which flowed out, in part, by the vagina.* A discharge, similar to the lochia, took place from the latter, and also from the opening. The patient was directed a nourishing diet and tonics. The pain and discharge gradually diminished, and by the 23d of July (1828?) the opening into the abdomen was contracted to the size of a common quill, and by the end of August, closed completely; the patient having acquired her ordinary health and strength. The opening, through which the child was discharged, was situated on the right side, about an inch behind and below the navel. No unusual form of the uterus had been noticed, which would have led to the suspicion that the child had escaped from it; and that such was not the case, is rendered almost certain, by the fact of the uterus regularly contracting during, and subsequently to, the removal of the fœtus; by the discharge of the lochia from the natural passage, as well as through the opening, and by the escape of the fluid thrown in at the latter, from the vagina. The most remarkable feature in this case, is the circumstance of its having terminated without destroying the life of the mother. The foregoing case is related by Dr MULLER of Lowenberg, Silesia, in RUST's Magazine, Vol. XXVIII. No. 1, 1823.

75. *Cæsarean Operation.*—Dr MULLER, of Löwenberg, in Silesia, resorted to this operation in July 1822, in the case of a very deformed female, 33 years of age. The waters had been discharged for 24 hours; the mother was conscious of the child's movements, and its head was not wedged in the pelvis. The woman's strength was much exhausted, and no alternative remained between the death of the patient, or immediate resort to the Cæsarean section. An external incision in the linea alba was made, nine inches in length, which exposed the glistening surface of the uterus. A part of the uterus was pinched up, and an incision made where few bloodvessels were observed. Very little hemorrhage followed, and care was taken to sponge the blood as long as it continued to flow. The child, alive and vigorous, was removed by the feet; and soon after the placenta was removed by introducing the hand previously cooled in water. Pressure at this time was made on the abdomen to prevent the admission of air into the cavity. The uterus contracted in the usual manner. The patient's life was afterwards threatened by inflammation and fever. She however recovered; and four years after Dr MULLER saw her in good health. The child lived for more than three months. It then died of convulsions.—*Ed. Med. & Surg. Jour. April* 1829.

76. *Absorption of the Placenta by the Uterus.*—In the London Medical Gazette, is published a letter from professor NAEGELE, of the University of Heidelberg, in which he details several cases in which the whole or a part of the placenta was never discharged after the delivery of the child, but was absorbed by the internal uterine surfaces. The first case occurred to him in 1802, since which he has seen and heard of several others, particularly in premature labours, where no traces of the placenta in a solid or half dissolved form had come away, and this had occurred without any injurious consequences.—*Lon. Med. and Phys. Jour. Feb.* 1829.

VIII. CHEMISTRY AND PHARMACY.

77. *Mr* GRAHAM's *Method of Procuring Absolute Alcohol.*—Cover a large shallow basin to a small depth, with lime in coarse powder, and support a smaller one, containing three or four ounces of commercial alcohol, just above it. Place the whole on the plate of an air-pump, covered by a low receiver, and withdraw the air, until the alcohol begins to boil. Of the mingled vapours of water and alcohol which fill the receiver, the former alone is absorbed by the lime, while the latter is unaffected. An atmosphere of pure alcoholic vapour is thus formed, which effectually arrests the further evaporation of the alcohol; but the water continues to evaporate, as fast as its vapour is absorbed by the lime. This takes place in consequence of the law, that one vapour passes into an atmosphere of another vapour, as it would do into a vacuum.—*Turner's Chemistry, 2d edit., from the Edinb. Philos. Trans. for* 1828.

78. *Weight of Pure Atmospheric Air.*—We learn from Dr TURNER, that Dr PROUT is at present occupied with the investigation of this important subject. His researches are not yet completed; but, as far as they go, he has satisfied himself that 100 cubic inches of pure atmospheric air, at 60° Fahr. and 30 inches of the barometer, weigh at least 31 grains. He, therefore, believes, that the determination of SHUCKBURGH of 30.5 grains, is inaccurate.—*Turner's Chemistry, 2d edit.*

79. *Composition of Crystallized Oxalic Acid.*—Dr PROUT has convinced himself, by repeated experiments, that crystallized oxalic acid consists of one atom of dry acid, 36, and three atoms of water, 27, and not four atoms, as generally given on the authority of Dr THOMSON. This proportion agrees with that

obtained by BERZELIUS, who found the crystallized acid to contain rather more than 42 per cent. of water.—*Ibid.*

80. *Action of the Sun's Rays on Nitrate of Silver dissolved in Common Water; by* M. VOGEL, *of Munich.*—HERMBSTAEDT having observed that a very weak solution of nitrate of silver, became reddened on the borders of the sea, supposed the change to arise from a gaseous principle contained in the air; in which opinion he was supported by MM. KRUGER and PFAFF. Some years afterwards, M. VOGEL was led to believe from some experiments of his own, that the change was owing to a muriate, suspended in the atmosphere by aqueous vapour; and subsequently finding that water, in every situation, became red by the addition of a few drops of the solution of nitrate of silver, if exposed to the sun, he was led to believe that in every water, there were traces of some muriate.

M. ZIMMERMANN of Geissen, arrived at another conclusion; namely, that a peculiar vegeto-animal matter, to which he gave the name of *pyrrhine*, occasioned these changes. The existence of this peculiar matter was admitted by several German experimenters; and, M. VOGEL, being thrown into some doubt as to his previous results, was induced to make a new series of experiments. The conclusion to which he has arrived, is, that water, by passing through the earth, or through the atmosphere in the form of rain, comes in contact with organic substances, such as wood, leaves, roots, &c. or with the dust floating in the air, and thus dissolves something, not always identical, which communicates to it the property of reddening in the sun, on the addition of nitrate of silver. As, therefore, the organic matter producing this change, is variable in its nature, M. VOGEL considers it improper to distinguish it by a peculiar name, as if it were a distinct proximate vegetable principle.—*Jour. de Phar. Mar.* 1829.

81. *Process for extracting Urea; by* M. HENRY, *Jun.*—Urea having of late been used medicinally in the hospitals of Paris in diabetes and dropsies, the apothecaries were under the necessity of preparing it. M. HENRY not being satisfied with the small product obtained by the process given in the work of M. THENARD, devised the following, which yields a larger quantity. Add to fresh urine a slight excess of subacetate of lead. This will form a precipitate, consisting of the oxide of lead united to the various acids of the urine, together with the mucus and a great part of the animal matter. The decanted liquid is then treated with sulphuric acid in slight excess, to separate the lead, and, afterwards, in the progress of the evaporation, to decompose the acetates of soda and lime, which may have formed. After having separated the white precipitate, concentrate very rapidly over a steady fire, adding a portion of animal charcoal during the ebullition. When the whole has become a clear syrup, pass it through a linen of close texture, and then reduce it one-third by evaporation. By cooling, the liquid is converted into a yellow mass, crystallized in needles, formed of much urea and some salts. The crystals being drained and pressed, are added to those obtained from the mother-waters, treated in a similar manner. They are next treated with a very small quantity of carbonate of soda, with a view of separating any remaining acetate of lime, and then digested in alcohol of 38° or 40°. The alcoholic solution being filtered, and the alcohol separated by distillation, the urea remains, which may be crystallized anew from water, if necessary. The urea, as thus obtained, is in silky or prismatic needles, very soluble, and of a cooling taste.—*Journ. de Pharmacie, Avril* 1829.

82. *Nature of Starch.*—M. GUIBOURT lately read a memoir on this subject before the Section of Pharmacy of the Royal Academy of Medicine. The author first considers the researches of M. RASPAIL, who conceives the grains of fecula to be an organ, each composed of a skin or tegument, insoluble in cold water, and an interior soluble matter, resembling gum; and afterwards reviews the labours of M. CAVENTOU, contrary to the conclusions of the former.

The fecula of the potato, when well prepared, is insoluble in cold water; but when levigated upon a porphyry stone, it loses its whiteness and the shining appearance of its particles. If it be now moistened with water, it forms a tenacious paste, and, if beaten in a mortar, it gives a mucilage, analogous to that of tragacanth. These effects are independent of any heat caused by the trituration. The entire fecula, upon adding the aqueous solution of iodine, slowly assumes a sky-blue colour. The levigated fecula, the moment it is brought in contact with water, gives rise to currents, which are the consequence of the emission of the soluble matter from the torn granules. The solution of this matter, especially when it is assisted by a gentle heat, permits the torn teguments to be readily seen. Concentrated acids and alkalies dissolve the granules entirely, and hence do not furnish the means of distinguishing the teguments from the soluble part. The aqueous solution of iodine, added to a solution of the levigated fecula, produces at first a sky-blue colour in the dissolved portion; but very soon causes, in the teguments, a deep blue colour, approaching to black, which arises from the concentration of the iodine in the interior of the envelopes. Hence M. Guibourt supposes that fecula is formed of granules, consisting of insoluble envelopes, containing a soluble matter. The latter, freed from the envelopes by filtration, retains the property of striking a blue colour with iodine. M. Guibourt has also observed, in common with MM. Colin and Gaultier de Claubry, that fecula, which has been rendered blue by iodine, loses its colour by agitation, even in close vessels; a circumstance which is attributed to the formation of the white protiodide of starch, and not to the loss of a volatile principle, as supposed by M. Raspail. The soluble part of the fecula, even after long ebullition, still retains its property of becoming blue with iodine; for this portion is not gum, as M. Raspail supposes.

M. Guibourt afterwards ascertained that the envelopes and the soluble part of the granules of starch differ chemically but little from each other. Both portions are rendered blue by iodine, and are precipitated by galls and metallic solutions. The envelopes are dissolved by ebullition in water, and appear not to differ from the substance in the interior of the granules, except that their texture is more dense.

As starch is thus proved capable of being rendered soluble by simple trituration, it will soon come to be employed in place of gum in the arts. This method alters the fecula less than torrefaction, which has heretofore been employed to effect the change into gum.

The starch of wheat consists of very small granules, and furnishes less of the envelopes than potato starch. *Arrow-root* presents larger granules than starch; and it gives less consistence to boiling water, which appears to arise from its containing more water. *Tapioca*, after having been dried on warm iron plates, consists of burst grains, forming irregular lumps: it strikes a deep blue with iodine. *Sago* is the least soluble of the feculas in boiling water. Its reddish colour is not owing to a slight torrefaction, as has been supposed, but to a distinct principle, which operates to glue the grains together. *Salep*, which has been so well examined by M. Caventou, is not a fecula, but a substance which presents many of the characters both of bassorin and starch. It also becomes blue with iodine.

M. Theodore de Saussure has given the name of *amidin* to a product of the spontaneous alteration of starch. M. Raspail considers it to be the teguments of the starch which have escaped decomposition, and M. Caventou, his modified starch. Its properties are intermediate between those of gum and starch. It is partly soluble in cold water, and entirely soluble in water at the temperature of 140°. It becomes blue by iodine. M. Guibourt regards amidin as uniting the properties, assigned by M. Raspail to the teguments of starch, and those which M. Caventou attributes to his modified starch.—*Journ. de Pharmacie, Mars.* 1829.

In the Journal de Chimie Médicale, for April 1829, is contained a note by M. Guibourt, supplementary to his memoir on starch, on the *hordein* of Proust.

This substance he considers to be the teguments of starch, mixed with a small quantity of ligneous matter.

83. *Detection of mixtures of Potato Starch with Wheat Flour.*—M. HENRY proposes to detect this adulteration, by ascertaining the quantity of gluten in the suspected flour, and comparing this with the average quantity in good flour. He finds the average per centage of dry and pulverulent gluten in good flour, deduced from the examination of from twenty-five to thirty samples, to be ten and a quarter; while the percentage in the adulterated flour was only six and a half.—*Journ. de Pharm. May* 1824.

84. *Crystallizable Matter of the Essential Oil of Orange Flowers; by* M. A. PLISSON.—*Preparation.* Add alcohol of 35° of Baumé, to the volatile oil, until it ceases to produce a white precipitate. The precipitate is then purified by edulcoration with alcohol, solution in sulphuric ether, and re-precipitation by alcohol. To obtain it crystallized, its solution in ether is evaporated spontaneously.

Properties. When obtained by means of ether, the matter is in white, pearly crystals, without taste or smell, or action on vegetable colours, and having some resemblance to spermaceti, slightly triturated. Cold concentrated sulphuric acid does not act upon it, but chars it with the assistance of heat. Boiled with twenty-five times its weight of concentrated nitric acid, until the acid was half evaporated, a part volatilized, and the rest remained unaltered. Muriatic acid, either hot or cold, had no action on it. M. PLISSON proposes the name of *aurade* (aurantium, adeps) for this new substance.—*Journ. de Pharm. May* 1829.

85. *Nature of Copaiba.*—Mr DURAND, of this city, has given an interesting memoir on this substance in the Journal of the Philadelphia College of Pharmacy. According to his experiments, it dissolves in twenty-five times its weight of alcohol of 35° of Baumé, with the exception of a fatty matter, which precipitates in the form of semifluid, transparent, yellowish globules. It is totally soluble in ether.

Mr DURAND confirms the fact observed by M. MIALE, that copaiba may be solidified by magnesia, so as to form a mass of a convenient pilular consistence. (See Vol. VI. p. 204 of this Journal for M. MIALE's results.) He also finds, as mentioned by the French pharmaceutist, that the solidification will succeed only with magnesia which has been strongly calcined; and that this change is a test of the purity of the copaiba.

Mr DURAND, from his experiments, deduces the proximate constituents of copaiba to be, an *essential oil;* a *resin; acetic acid; fatty matter,* and traces of *muriate of lime* and of a *sweet principle.*

The essential oil distils over at about 228°. It is limpid and colourless. Sp. gr. 0.880. It is volatile and inflammable, and possesses a peculiar taste, which is far less bitter and acrid than that of the essential oil of turpentine.

Mr DURAND finds the essential oil to be a good solvent of caoutchouc. He has also discovered that it is an excellent liquid for the preservation of potassium. At the request of Mr D. one of the editors of this Journal gave the oil a trial for this purpose, and was exceedingly pleased with the result. The alkaline metal, when immersed in it, preserves its bright appearance, while in ordinary naphtha, it becomes covered with a black film. The want of action of potassium shows, as the author of the paper remarks, that the essential oil contains little or no oxygen. The thanks of chemists are due to Mr DURAND for the discovery of this important fact.

Mr DURAND, in conjunction with Dr STAPLES, has ascertained that copaiba contains acetic acid; for the acid present, when neutralized by oxide of lead, furnished acetate of lead.—*Journal of the Philadelphia College of Pharmacy, April* 1829.

Miscellaneous Articles.

Henderson's Bichat.—An Epitome of the Physiology, General Anatomy, and Pathology of BICHAT. By THOMAS HENDERSON, M.D. Professor of the Theory and Practice of Medicine in Columbia College, Washington City. Philadelphia, CAREY, LEA & CAREY, 1829. Pp. 326, 8vo.

The form of question and answer, in which this work is compiled, is that best calculated to arrest the attention, and impress on the memory of the student, those grand principles of medical science, so intimately associated with the name of BICHAT. The epitome of Dr HENDERSON ought and must find a place in the library of every physician desirous of useful knowledge for himself, or of being instrumental in imparting it to others, whose studies he is expected to superintend.

Fitch's Dental Surgery.—A System of Dental Surgery. In three Parts. I. Dental Surgery as a Science. II. Operative Dental Surgery. III. Pharmacy connected with Dental Surgery. By SAMUEL SHELDON FITCH, M.D. Surgeon Dentist. New York, G. & C. & H. Carvill, 1829. Pp. 568.

This volume, by Dr FITCH, a dentist of our city, must satisfy the greatest lover of references and authorities on Dental Surgery. Its industrious compiler will, however, soon discover that careful elaboration of opinions and testimonies is not less essential to the purposes of sound instruction, than slow mastication by good teeth, to healthy digestion. Time and the judicious selection of materials are equally necessary for success in both cases. As we are without a standard by which to judge works of this nature, the author of the present one may still claim and receive commendation for what he has already accomplished —with the express understanding, that much yet remains to be done.

Edwards on the Physiological Characters of the Human Race.—Des Caractères Physiologiques des Races Humaines, considerés dans leurs Rapports avec l'Histoire. Par W. F. EDWARDS, D.M. Paris, 1829. Pp. 129.

This interesting essay on the physiological characters of the varieties of the human species, considered in connexion with history, is addressed in the form of a letter to M. AMEDEE THIERRY, author of the history of the Gauls. Dr EDWARDS does not lay much stress on the modifying influence of climate. He believes that the physical peculiarities of a race may be preserved for a long series of ages, and that even after a people are dead in history, they may yet be shown to be in fact numerous; and their consanguinity or common origin with other and occasionally remote nations proved, by the possession of common physiognomical traits. The Jews are a remarkable example of this fact. A strong family resemblance is found between those pictured on the tomb of the ancient Egyptian king, brought by Belzoni to London, the figures in the Last Supper of Leonardo da Vinci, and the Jewish inhabitants of London at the present day. It is very obvious that history may derive useful aid from this department of physiology, as it has already done from a careful comparison of the languages and dialects of the different nations scattered over our globe.

Adelon's Physiology.—A second edition of Professor ADELON's large work on Physiology, has recently been published in Paris. It is the most complete and impartial summary of experimental and theoretical physiology extant.

Blainville's Comparative Physiology.—Among the publications which promise to enrich physiology and illustrate natural history, is the *Course of General and Comparative Physiology*, by the celebrated DUCROTAY DE BLAINVILLE. It consists of his lectures as Professor in the Faculty of Sciences of Paris, and will appear in numbers. Two have already reached us.

Edwards's & Vavasseur's Materia Medica and Pharmacy; translated by J. Togno, M.D. & E. Durand.—In the press, and speedily will be published by Carey, Lea & Carey, Materia Medica and Pharmacy, by H. M. Edwards, M.D. and P. Vavasseur, M.D. comprising a concise description of the articles used in medicine; their physical and chemical properties; the botanical characters of the medicinal plants; the formulæ for the principal officinal preparations of the American, Parisian, Dublin, Edinburgh, &c. pharmacopœias; with observations on the proper mode of combining and administering remedies. Translated from the French, with numerous additions and corrections, and adapted to the practice of medicine and the art of pharmacy in the United States. By Joseph Togno, M.D. member of the Philad. Med. Society, and E. Durand, member of the Philadelphia College of Pharmacy.

New York Medical and Physical Journal. The first number of a new series of this work, commencing with April of the present year, has recently appeared under the immediate editorship of Dr PEIXOTTO, assisted by a number of gentlemen, principally resident in New York. The publication is enlarged, and somewhat altered in its plan. We regret very much that it was received too late, to enable us to glean from its important contents for the present number.

New York College of Pharmacy.—We learn with much satisfaction, from the New York Medical and Physical Journal for April, that a College of Pharmacy has been established in that city.